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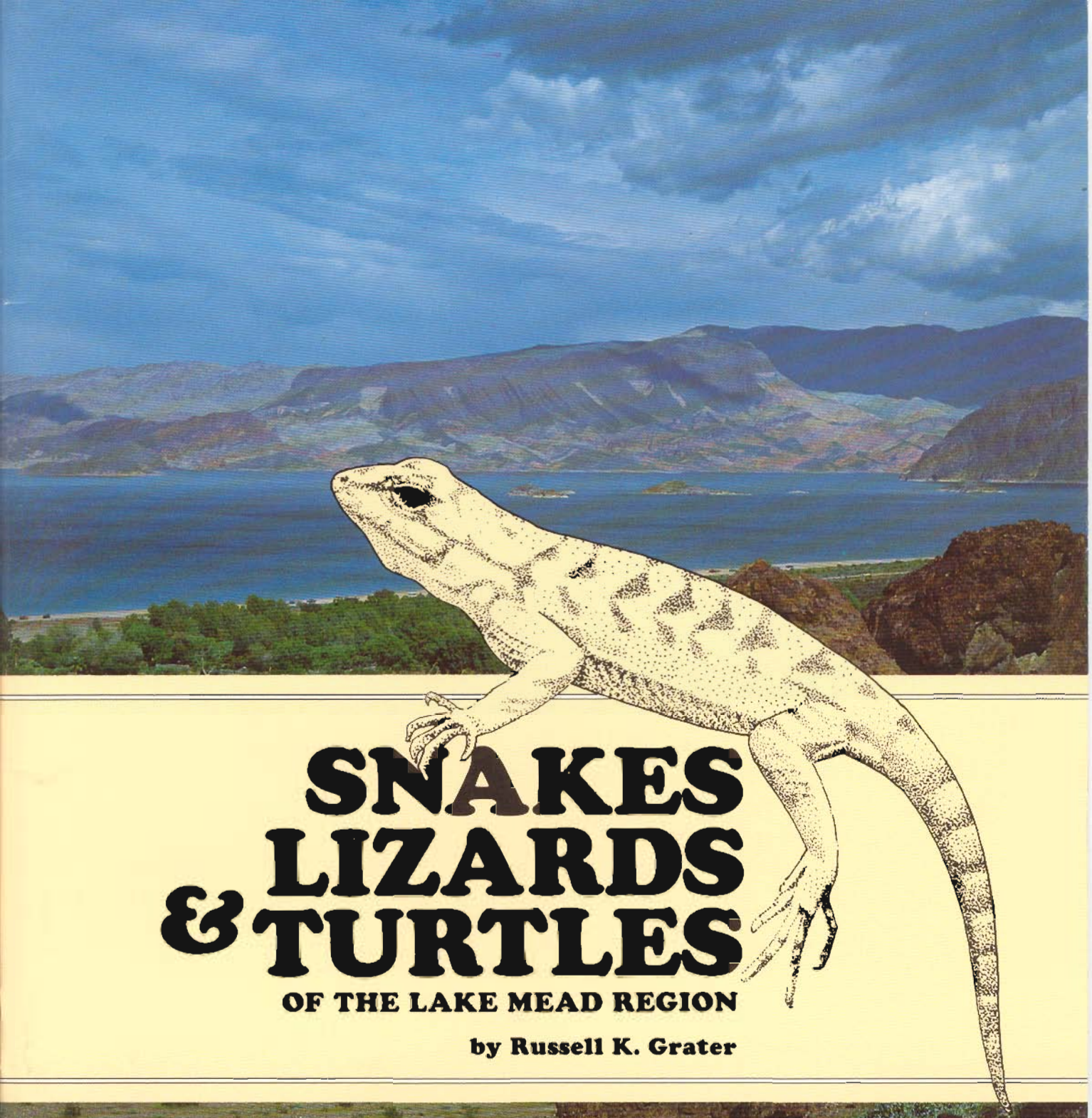

SNAKES LIZARDS & TURTLES

OF THE LAKE MEAD REGION

by Russell K. Grater

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I dedicate this to my wife whose encouragement was so important while developing the manuscript, and for her tolerance in allowing me to use her refrigerator to "cool down" such reptiles as rattlesnakes for photographing!

Photographs by the author unless otherwise noted.

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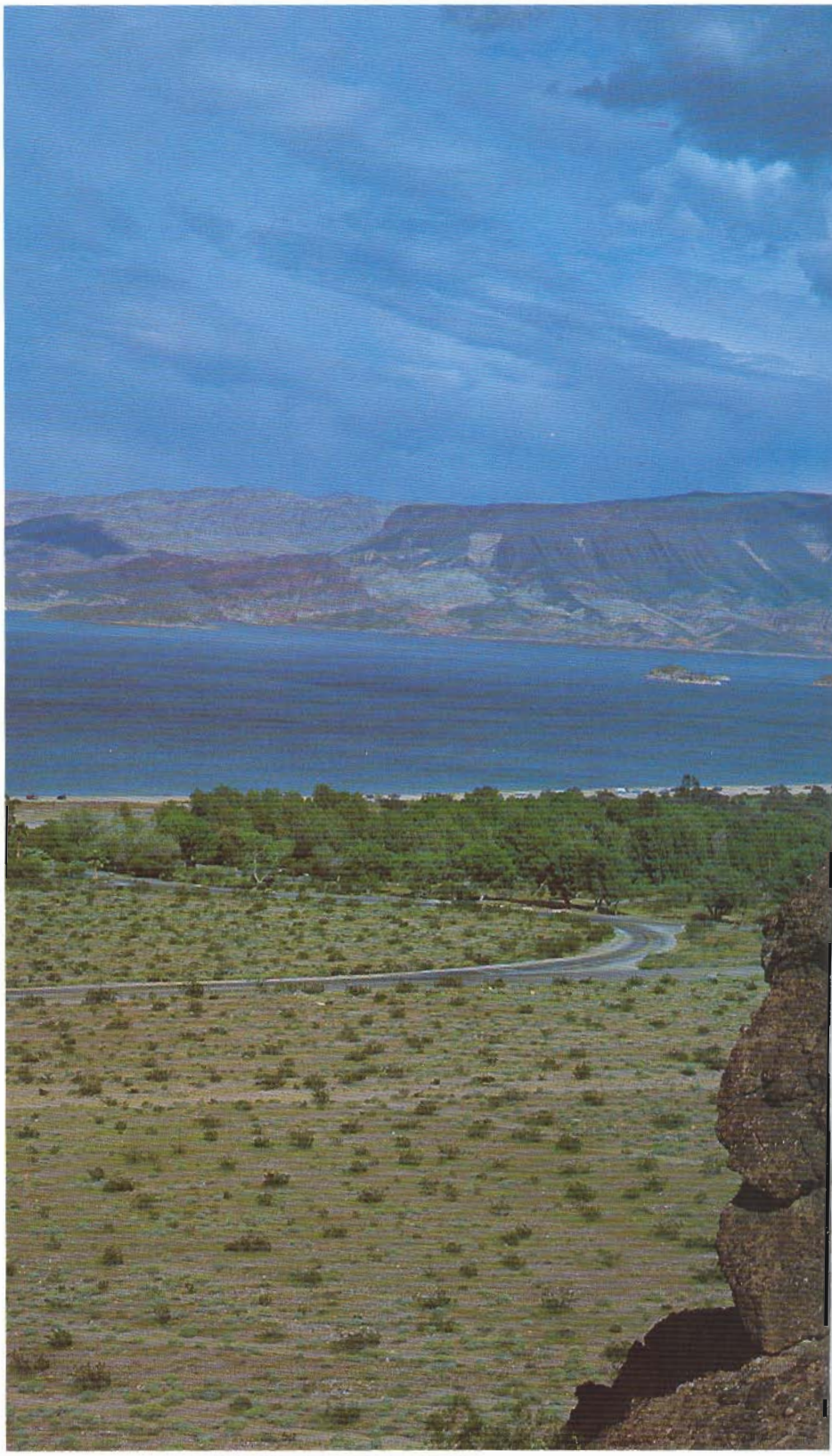

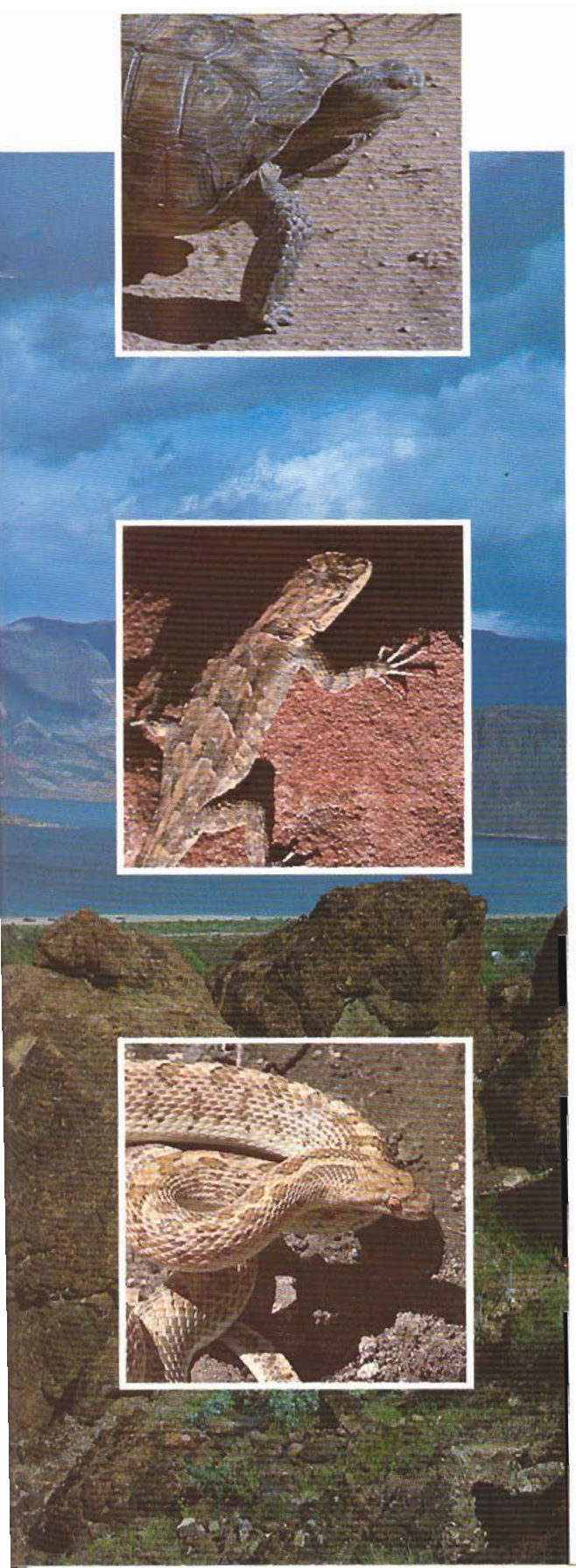

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INTRODUCTION

I was seated in my office one late spring morning when two little boys about five years of age came in to see me. One was carrying a small cowboy boot in his hand. I was Chief Park Naturalist of Lake Mead National Recreation Area at that time, and it was nothing unusual for children to visit my office to see study skins of birds and mammals, and ever so often someone would bring an injured or dead bird for me to see. Thus I wasn't at all surprised to see this youngster carrying one of his boots. The conversation that followed went something like this:

"What do you have there?" I asked.

"We don't know," replied the boy. "But, Mr. Grater, we were sure you would be interested to see what we found."

I took the boot and started to up-end it on my desk when I heard a faint whirr inside. Cautiously I dumped out the contents—and found myself facing an angry sidewinder! It was not fully grown, but was certainly large enough to be dangerous. Getting the snake under control and into a container, I asked the boy, "Did it bite you?"

"No," he said. "It just tried to get away."

Well, I examined the boy anyway, but found no sign that he had been bitten.

"Where did you find it?"

"Out at water-tank hill. We were out in the desert just looking around and we found it. We didn't know what it was, but we thought you would want to see it, so we decided to catch it! We looked around for something to put it in, but we couldn't find anything so I just took off my boot and we put it in there!"

"But how in the world did you get the snake into your boot?"

"Oh, it was easy! I just laid my boot on the ground and motioned it to go in!" the youngster said, slowly waving his hand behind an imaginary snake to show how it was done.

To say that I was flabbergasted would be putting it mildly! Why the sidewinder hadn't bitten the boy was hard to understand. Possibly it was as astonished as I was.

Now, not everyone is as interested in reptiles—or as poorly informed—as this youngster, but one thing is certain Nearly everyone likes to talk about reptiles, especially snakes, and usually they are not well informed on the subject. Most are full of stories and beliefs, "old maids'" tales and the like, but seldom possess a very credible knowledge about snakes or any other reptiles.

Visitors to the desert often ask about snakes, especially rattlesnakes, and wonder how safe it is to venture beyond the road edge. Such fears are easy to understand for the desert is frequently pictured as a harsh, dangerous country, with a rattler or some other dangerous reptile likely to be found under any bush—just waiting to take a crack at the first person who happens along! Actually, people living in the desert often go for years without seeing a rattlesnake. When they see one it is mostly in areas a considerable distance from towns, roads and the like. Rattlers don't care for people any more than people care for them. If you should happen to meet one—let him go his way, which he will gladly do if you will just leave him alone. He wants no part of you!

Possibly you will be relieved to learn that poisonous reptiles are found in greater numbers in the Midwest and South than in the desert. The reasons for this are easy to understand once they are pointed out, which this little book will attempt to do.

Some facts (and fancies) about reptiles

There are many good books about reptiles, describing their characteristics, markings, etc., so only a few facts need be pointed out here to aid in better understanding those of this region.

Snakes and lizards have scales covering the body; some have large scales, some small. Snakes have no ears or eyelids; lizards have both. The reptile skin does not grow larger; it must be shed when outgrown. Lizards and turtles swallow their food; snakes do not, they engulf it. Reptiles live from one day to the next; food is not stored. Food is not chewed. Most reptiles have teeth; some do not. Fangs are found only in poisonous species. Some reproduce by laying eggs; others give birth to young fully developed and ready to care for themselves. None can take high temperatures of direct sun heat for more than a few minutes at a time, a matter of great importance to desert dwellers.

So much for some important facts. Now let us examine some of the "fancies."

There is enough of the unexpected about reptiles, plus their appearance, for many persons to believe all sorts of stories about the scaly creatures. We scoff today at the tales of early people who believed in fiery dragons and sea serpents large enough to sink ships. At the same time we hear modern tales such as the "hoop snake" story—the fabulous reptile that grabs its tail in its mouth and rolls away when threatened. If it should hit a tree enroute, it plunges a stinger into the tree and the tree dies! Or, how about the whipsnake that lashes a person with its tail or lies in wait in a tree and drops onto some unsuspecting passerby, wrapping its coils tightly about the neck and choking the victim to death! Have you heard of the "spreading viper" that hisses and blows, and if you breathe the air around it you will die of convulsions? Of course there are less dramatic happenings. The milk snake is supposed to milk cows out in the pasture; its needle-sharp teeth should quickly lay this tale to rest! The so-called "glass snake" is supposed to break itself into pieces when a person approaches, each piece hiding until all danger is past then joining the others again. The tales go on and on!

Fear of reptiles, plus a fertile imagination, produces all sorts of stories. Certainly it is true that a snake .9 meter (3 feet) long running away often becomes 2 meters (6 feet) long if it is coming toward the story teller!

Every section of our country has its quota of such stories, and the desert is no exception. You may hear all sorts of weird tales—and they won't all come from old-timers.

Factors controlling abundance and distribution

The desert seldom provides an excess of food, whether it be for a reptile, mammal, bird or insect. This situation is especially critical to a snake or lizard. With lack of water, poor soil and adverse climate the desert is not covered with a heavy growth of vegetation, and it is plant life that furnishes the base of any food chain. Without green growth, the protection plants supply, and the production of flowers and seeds, the insects and other invertebrates, mice, ground squirrels, kangaroo rats, woodrats, rabbits and birds could not

survive. These creatures are the principal foods for lizards and snakes. As plant life is not abundant, few areas have everything needed by reptiles to insure their survival.

Enemies are a constant threat, and the reptile's life expectancy is usually short. Most species are under heavy hunting pressure from such predators as hawks, owls, roadrunners, coyotes, foxes, badgers, and other reptiles. Choice of habitat helps increase the chances of a longer life.

As though the problems of water, food and predation were not enough, there is the matter of living in high temperatures for several months each year. Neither lizards nor snakes can survive very long if exposed to direct sun heat when the temperature soars above 38 C (100° F)—and such temperatures are common. Thus reptiles seldom move around very much during the heat of the summer day. Mostly they are active in the cooler hours of early morning or late evening, or hunt for food at night.

Some reptiles are relatively common in our region and can usually be seen during a walk in the desert. Almost any area may be the home of some species of lizard or snake, but if you wish to find a variety of either, locate a wash or suitable habitat where plant life is fairly abundant. However, don't be surprised if you fail to find any snakes. They are less commonly seen than lizards and an entire year or more may pass without one being reported.

A review of reptile species

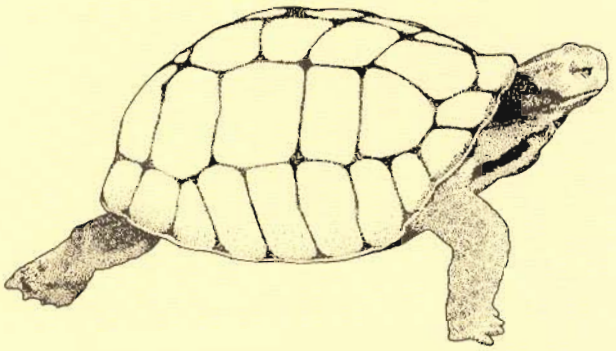
The region covered in this booklet includes a large part of north-western Arizona south and east of Lakes Mead and Mohave, and a broad territory of southern Nevada lying north and west of the two lakes.

Reptiles included are those found from low valleys up to the higher elevations of about 1678 meters (5500 feet). Species occuring on the Shivwits Plateau at the western end of the Grand Canyon are not included, although this highland region is presently a part of Lake Mead National Recreation Area. When a thorough field study can be made in the Newberry Mountains at the southern end of the recreation area, it is likely one or more reptile species will be added to the regional list.

For thousands of years the Colorado River has been an important factor in reptile distribution. Apparently the birth of the river isolated members of some species from others of their own kind, and as time went on, some of them began to change, each in its own way adapting to the conditions under which it lived. Thus they evolved into closely related, but not identical, life forms. Today a number of reptile species have counterparts on opposite sides of the river, often only 183 or 274 meters (200 or 300 yards) apart.

Most of the species that follow, or closely related species, are also found in Death Valley and Joshua Tree National Monuments, in the nearby Nevada State Parks of Valley of Fire and Spring Mountain Ranch, and in the Red Rock Canyon Recreation Area. Those which occur in Death Valley National Monument are indicated by an (*) placed by the common name; those found in Joshua Tree National Monument are indicated by a (†).

THE TURTLES



The desert is not suited to this kind of reptile and only one—the Desert Tortoise—has adapted to life in such a hostile environment. A second member of the family, the Texas Softshell, exists here only because it can utilize waters of the Colorado River, now impounded behind Hoover and Davis Dams. A third, the Yellow Mud Turtle, has been reported a few miles below Davis Dam and may possibly occur around the shallow portions of Lake Mohave, but will not be discussed here.

TEXAS SOFTSHELL

Trionyx spiniferus emoryi

THIS IS A VERY FLAT-BODIED TURTLE, its back covered with a flexible, leather-like skin. The legs are flat, well designed for swimming, and the toes are prominently webbed. The nose is rather long, slender and flexible. Often it may be seen with only the long snout rising above the water surface to obtain air, while the body remains submerged. It feeds on insects, earthworms, crayfish, snails, small fish, frogs and tadpoles. Other names are Leatherback Turtle and Soft-Shell Turtle.

It prefers quiet water, with a muddy or sandy bottom. While much of its time is spent in the water, it does enjoy basking on shore for a time in the warm sunshine. The eggs are laid in sandy banks, usually during May and June

During the formation of Lake Mead, this turtle was found in surprising numbers. It is not native to the Colorado River, having been introduced from New Mexico about the turn of the present century. Reports indicate it was placed in the river near Yuma, Arizona Being a freshwater turtle it moved upstream and finally reached relatively calm waters above Black Canyon. How it managed to get through some of the rapids along the way cannot be known, but it obviously did succeed. In recent years it has been observed only occasionally in either Lake Mead or Lake Mohave. If found, care should be exercised, as this turtle is quite active and can inflict a painful bite.

DESERT TORTOISE

Gopherus agassizi

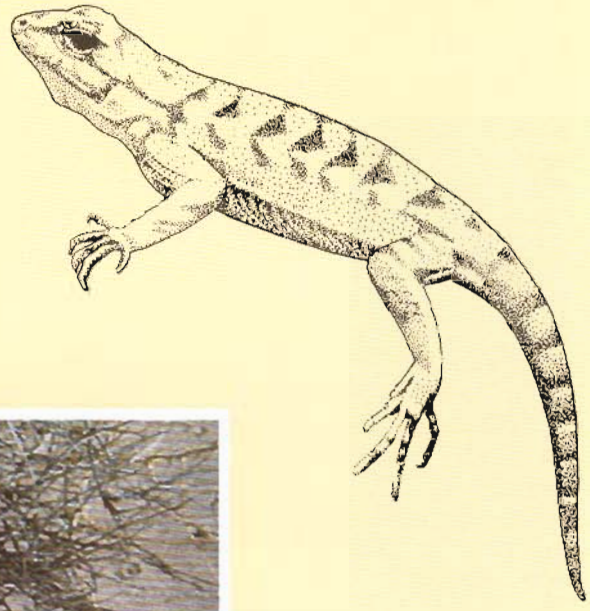
THIS REPTILE LIVES UNDER HARSH CONDITIONS, usually where there is a scarcity of water and plant food. The wide-spread creosotebush community is an important part of its domain, and supplies much of the food it eats. A vegetarian, it lives on grasses, cacti and any flowers or leaves of a succulent plant. For some obscure reason the tortoise is very partial to yellow flower heads and is especially fond of the desert dandelion. Most of its eating is done in the spring when flowering annuals are available, and in the fall when late summer rains produce a few green plants. Foraging is done during daylight hours. Water is readily taken when available, but it can do without for long periods of time. Much of its moisture is obtained from plant foods.

There is also a small bladder beneath its hard shell which stores surplus liquid to be used as needed.

The tortoise favors the banks of washes and blow sand deposits. During summer heat it likes to live in a burrow which it may dig, or to modify an old den dug by some other animal. It usually comes out during the cool morning or late evening hours, or may decide to simply "sit out" the rest of the summer, especially if the temperature is high. A burrow is used in colder months for sleeping quarters while hibernating.

Once rather common, this slow-moving reptile is now seldom seen. Dozens have died on the highways, where drivers of cars sometimes deliberately crush them. Why this should be is hard to understand, as the tortoise is a harmless creature. It is now protected by law throughout the Southwest.

THE LIZARDS

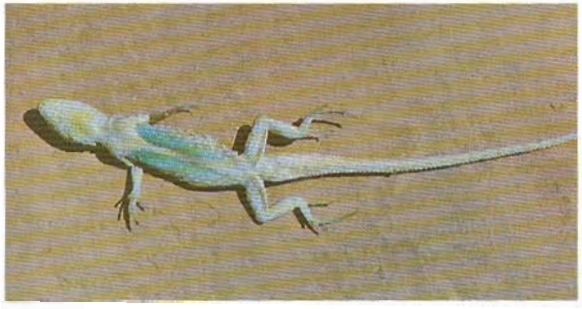


There are 58 species of lizards recorded in the western United States, of which 14 are found in the Lake Mead region. They range in size from the tiny night lizard to the Gila Monster. All lizards in this area have many characteristics in common. They are four-legged, compared to portions of the United States where some live that do not posses four legs. Our lizards have five toes, with claws designed for running, climbing or digging. They have ear openings and eyelids that can be opened or closed. They are covered with scales of varying types ranging in size from almost granular to large, spiny-tipped ones. The undersides also have scales. Some scales are specialized, such as the "horns" of the horned lizard. The skin does not grow larger as the body of the lizard enlarges, so the animal sheds the outgrown skin.

Some can regenerate a lost section of tail. The muscles of the tail and joints of the vertebrae are so arranged that they separate easily. Many have tails that are fragile and easily broken off when pulled or injured. There are different theories why this is so, but it definitely increases their chances of survival. If the tail is grabbed by a predator, it quickly breaks away, often leaving the attacker holding onto a frantically wriggling tail while the lizard runs away to safety and grows a new one. For some lizards the tail is especially vital, as it is used for balance when running. Some use the tail for storing fat, and can live on the fat when food is scarce.

The legs and tail give clues as to how the lizard lives. Long hind legs with long toes, plus a long tail, usually mean the individual depends upon speed and agility to catch its food and escape predators. Lizards of this type feed, for the most part, upon insects, spiders, scorpions, and other animal forms that must be captured. Some lizards are predatory and eat other lizards and small snakes. Shorter, more muscular legs and heavier tail are usually characteristic of a lizard that obtains most of its food without the necessity of pursuing it.

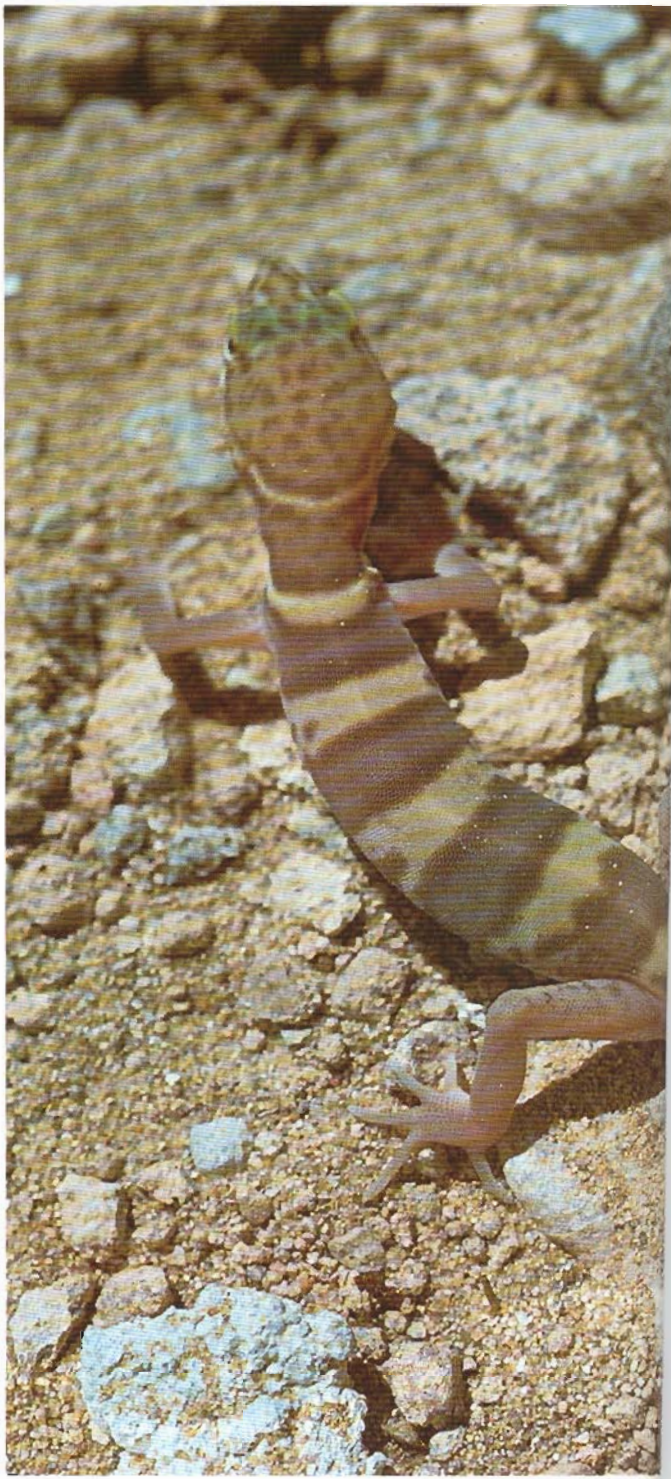
With exception of the night lizard, all hibernate during the cold winter months. However, because they are cold-blooded creatures, they quickly become active again as the air temperature rises. A few warm days in winter will cause some species to awaken and come out to bask in the sun. Courtship and breeding follow soon after hibernation. These activities last for several days. Eggs are laid soon afterward, with young appearing in late summer and early fall. Not all lizards are egg layers; some species give birth to fully developed young.



Most lizards are active during daylight hours, usually in the first few hours of morning before the real heat of day arrives, or in late afternoon when the temperature begins to drop. This is also the time when insects are more easily captured. Only two, the night lizard and gecko, typically do their hunting at night.

All are beneficial and, with exception of the Gila Monster, are non-poisonous and harmless. All deserve protection. Those in the National Park Service area and the nearby Nevada State Parks are protected by law.

Two other lizards—the Great Basin Fence Lizard and Short-horned Lizard have been reported from this region, but the records are believed in error. A third, the Utah Banded Gecko, has been reported near the Lake Mead region so may occur here. None of these three lizards will be discussed further.



DESERT BANDED GECKO *†

Coleonyx variegatus variegatus

THIS SMALL LIZARD APPEARS FRAGILE and seems almost translucent. The scales are very small, giving the skin a granular look. The eyes are movable, seem much too large for the head, and have vertical pupils. The tail is rather thick, appearing almost swollen and has a constriction at the base, allowing it to break off quite easily. It is able to climb on anything that is not entirely smooth.

Enemies are numerous, but it manages to survive, although there is some doubt it ever lives to a ripe old age. In addition to snakes and other predators that hunt at night, people constitute a threat, as they frequently kill the gecko thinking it is a young Gila Monster.

The gecko is rarely seen in daytime, although occasionally out in early morning and late evening. Hunting is done at night. For the most part it finds some place to hide during daylight hours, such as under rocks, dead or decaying vegetation, or in crevices, especially if these can be found on slopes near desert washes or spring areas. An old deserted building in the desert appears to have a special attraction, likely because it offers protection and a good assortment of insects and spiders for food. A few lizards hiss when threatened or disturbed, but the gecko expresses his feelings with a faint squeak. Nor does it restrict the squeaking to such occasions. It may sometimes be heard while hunting or exploring places of interest. Although it prefers warm nights, it has been seen when the temperature was below 21° C (70° F).

DESERT IGUANA *†

Dipsosaurus dorsalis dorsalis

ONE OF THE COMMON LIZARDS of the region, the iguana is a favorite for studies by local school children. It has a long, rather slender body, with a small head. The scales are small and somewhat granular in appearance. It inhabits the sandy desert wherever creosotebush is to be found, which is almost anywhere in this region.

Small green plants furnish much of its food. It eats the flowers and leaves of creosotebush and may sometimes be seen up in the bush having a meal. Most predators seem to like the iguana, and it furnishes fine eating for many kinds of enemies. Early day Indians found it very acceptable as food.

It is an inquisitive and curious reptile and likes to perch on a rock, where it can look over the area to see what is going on. If the stone is hot, it holds the body off of the surface by standing stiff-legged. This lizard withstands heat very well and may climb into a bush and stay there in the hot sun for several minutes at a time. Perhaps it has found air temperature in the bush is usually lower than on the ground. It drinks water when available, but most moisture needs are met through the food it eats. Shy when approached, if disturbed it heads for some convenient small mammal burrow under a bush, and is seldom found very far from such a shelter. When captured it puffs up its body with air, but soon resumes a natural shape if not harmed. It is a gentle reptile and seems to enjoy being held.

CHUCKWALLA *†

Sauromalus obesus obesus

MOST LIZARDS ARE SUN LOVERS of varying degrees, but this big, awkward looking one spends more time sprawled on a rock in the sunshine than most. It is the second largest lizard in the region, attaining a length of as much as 50 centimeters (20 inches).

The chuckwalla likes a rocky dwelling and is especially partial to old lava flows. Its territory is never very large if sufficient food is available. It is primarily a vegetarian. Creosotebush, one of the commonest desert plants, supplies much of its food.

Enemies are many and include hawks, snakes, coyotes and badgers. Early Indians ate the chuckwalla and considered it a delicacy. The meat tastes somewhat like chicken. When attacked the lizard crawls into a crevice in the rocks and gulps in as much air as it can hold, inflating the body much like a balloon. With its rough skin pressed against the rock, the lizard is difficult to pull from its hiding place.

When traveling it frequently sticks out its tongue every few steps as though to test the air. It likes to perch on a large rock and survey the world around it—even if the rock is too hot for hand comfort. Its color is dark when the lizard is cold, but tends to become much lighter as body temperature rises. It may sleep part of the summer if food becomes scarce. Under the loose skin are lymph spaces which fill with fluid after drinking. If moisture becomes hard to obtain during the summer, it lives off this fluid. It is gentle and easy to tame. A little girl in Boulder City was seen carrying one dressed in doll clothes.

ZEBRA-TAILED LIZARD *†

Callisaurus draconoides

IF YOU SEE A LIGHT-COLORED LIZARD take off across the desert traveling so fast your eyes can hardly see it go, you have likely come across one of these speedsters. Such great speed undoubtedly helps account for its abundance. It has a slim body, long, rather flat tail, and unusually long, slender hind legs well adapted for high speed travel. Black crossbars on the white under surface of the tail serve to identify it. The sides are usually a light yellow; black bars set in a blue area are on each side of the belly. There may or may not be a pink or orange spot on the dusky throat.

It dines on insects, spiders and other invertebrates, but is not at all averse to eating smaller lizards, which it can run down with ease. The lizard may vary the diet occasionally with small green plants.

It prefers to live around the broad washes and in areas where the ground is solid and there isn't enough plant growth to hinder running. While it may be seen on wind-blown sand, it will not be far from firm soil. It becomes active about midday in spring when the sun is warm enough, but in summer the air temperature is high enough for it to be an early riser. It often buries itself in sand at night, or may crawl into a convenient small mammal hole. If disturbed it will run to a bush for protection, stopping just before entering to see what you are doing, tail waving back and forth. This habit of tail waving may have value in possibly distracting an enemy. Should the tail be lost to an attacker, a new one is soon regenerated.

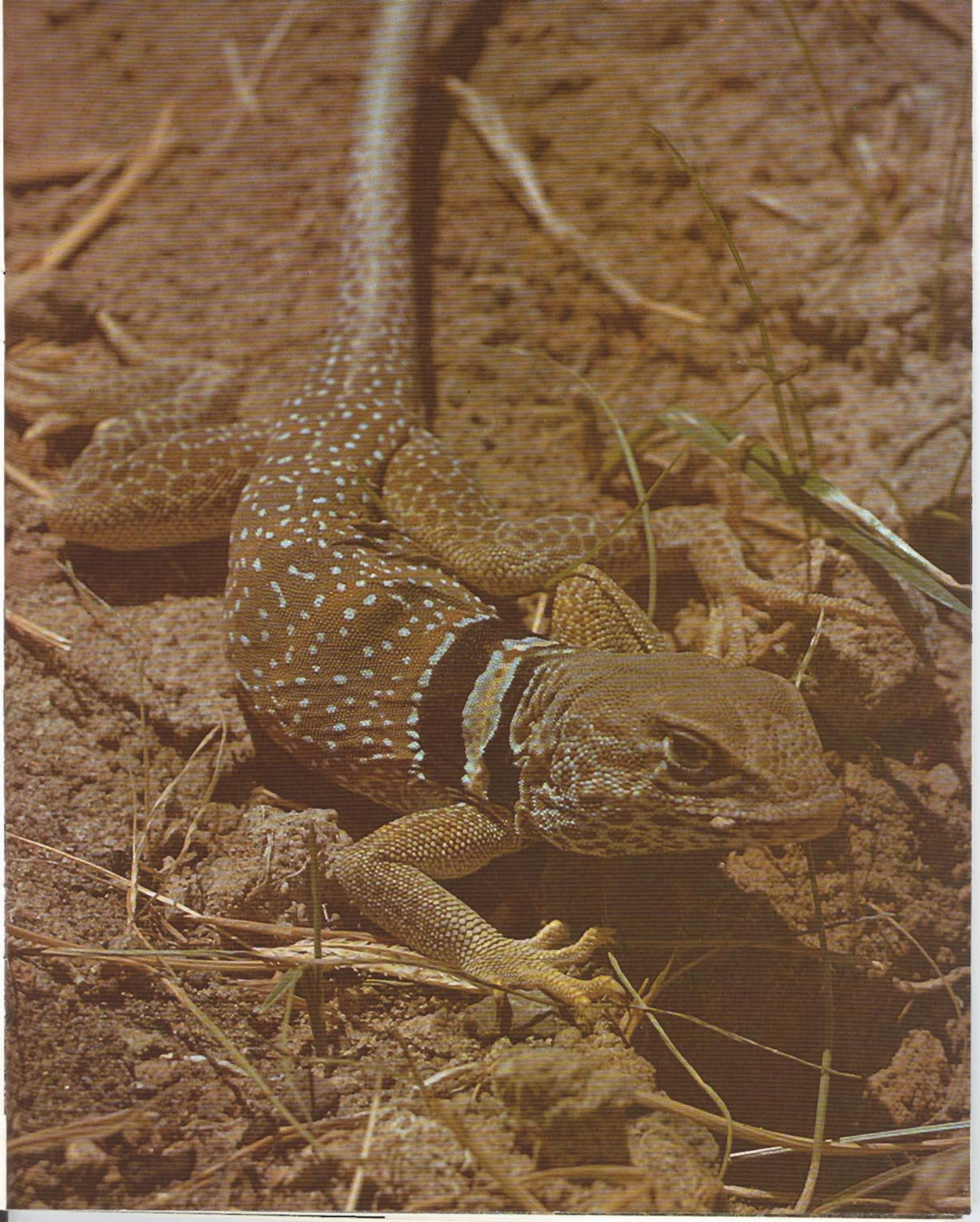
COLLARED LIZARD *†

Crotaphytus collaris

LOOKING AND ACTING like a miniature dinosaur, this is one of the most colorful of desert lizards. Ground color varies from greenish, bluish, olive, pale brown or yellowish. The male's throat may be green, bluish, orange or yellow, and he has a very conspicuous black and white collar. It grows to a length of about 35 centimeters (14 inches), the major portion of which is made up of the long tail. The hind legs are long, with toes designed for speed and agility.

For its home the lizard prefers a rocky situation where vegetation is not so abundant as to impede running. Canyons, rocky gullies, mountain slopes and boulder areas make up its domain Food is varied, ranging from smaller lizards, small snakes, various insects and larvae to spiders and almost any moving thing that is small enough to swallow. It pounces on prey with a rush, sometimes shaking it like a dog shakes a rat. When in pursuit it pays little attention to anything or anyone. It has one objective in mind and isn't about to be distracted! Only a threat to its own life will alter this course of action.

The lizard drinks when water is available, but obtains most of its moisture from insects and other foods. When not hunting it likes to find a boulder affording a good observation point and lies there basking in the sun. It pants to lose heat if the temperature climbs too high and quickly escapes to shade. If threatened it runs on its hind legs and can exhibit real bursts of speed. If captured it will bite, but cannot really hurt its captors. In late fall the lizard usually selects a place under an overhanging rock where soil is loose. Digging several inches into the ground to escape the freeze zone, an underground bedroom is made and here it curls up for the winter.



LONG-NOSED LEOPARD LIZARD *†

Crotaphytus wislizenii

THE LEOPARD LIZARD'S COLOR PATTERN helps conceal it from its many enemies. The ground color may be gray or brownish, with vivid "leopard spots" of red. It is capable of marked color changes. The long tail and powerful hind legs mark it as a predator. The male is often diffused with salmon color on the stomach and sides during breeding. The female shows orange on the under side of the tail.

This lizard prefers the somewhat open desert, avoiding areas of heavy, brushy ground cover which interfere with running. Rocks may or may not be present where it lives. It is fairly common throughout its chosen habitat.

Any kind of small insect and larva form, several kinds of lizards, small snakes, grasshoppers, crickets, spiders and even small mammals such as mice are eaten whenever available. While it apparently doesn't relish such, it will eat flowers and seeds if other food isn't found. It is a glutton, as this writer learned when he put one in a large box along with a few small lizards to transport from the desert to Boulder City. When the box lid was removed, only one lizard was to be seen. The bulging sides of the leopard lizard disclosed the whereabouts of his luckless companions!

When alarmed it can run quite fast, traveling on its hind legs. The long tail gives balance and the ability to dodge quickly. If captured it will bite, sometimes hard enough to break the skin on a person's finger, but can do no real damage. Like most other lizards it hibernates during winter months.

DESERT SPINY LIZARD *†

Sceloporus magister magister

THIS LIZARD, WITH PROMINENT, sharp-pointed scales and stocky body, looks like a miniature throwback to the Age of Reptiles. It seldom exceeds 28 centimeters (11 inches) in length, but does have a forbidding appearance that may help to protect it. A blue patch on the throat and one on each side of the belly are prominent features. The young lizard is only about 3 to 5 centimeters (1 to 2 inches) in length and has conspicuous black crossbands on the body.

It is relatively common in its chosen habitat, and prefers the desert flats and lower mountain slopes. It is often seen around joshua trees, other yuccas, mesquite, creosotebush and along stream courses where willow and cottonwood trees may be found. It also ranges into the juniper forest of extreme high desert. The diet includes various kinds of insects and insect larvae, spiders, smaller lizards and occasionally plant buds and leaves. Enemies are many with large hawks, various kinds of snakes and large predatory lizards causing the most concern.

An excellent climber, it likes trees and small shrubs. If disturbed, it often heads for the nearest tree and keeps the tree between itself and the intruder. If captured, the lizard is almost certain to bite, but the worst it can do is give its captor a good pinch. It seeks shelter in all sorts of places—crevices in the rocks, in woodrat nests and under almost anything found on the ground. If pressed, it goes into the most convenient small mammal burrow, of which there is usually a plentiful supply. Although often seen around cactus, it apparently is not bothered by the sharp spines.

DESERT SIDE-BLOTCHED LIZARD *†

Uta stansburiana stejnegeri

THIS IS ONE OF THE SMALLEST and most abundant desert lizards. With a total length of only 10 centimeters (4 inches), and seldom seen running about very much, it may go unobserved. The male's back is blotched and speckled and the scales small, thus blending the lizard's body into the desert scene. The female, however, is occasionally striped. A dark spot back of each front leg gives the animal its name.

The female may lay as many as three batches of eggs a season, usually four at a time. She has one interesting characteristic: she can store sperm and thus fertilize each batch of eggs when needed.

This lizard is a ground dweller and prefers sandy washes with scattered rocks and low bushes. It is one of the first to appear in the spring and one of the last to go into hibernation in early winter. With such a small body, its temperature can rise rapidly when in sunlight, and it is frequently seen on mild days even in winter. When not hunting for food, it likes to lie quietly in the sand, sunning itself. This lack of activity conserves body moisture, a matter of great importance. It frequently buries itself in the sand at night. If captured it may play "possum" and appear lifeless. Due primarily to its many enemies it has a short life, usually living only two years. It is durable, however as it is one lizard which seems not to have been affected by radiation from the first aboveground atomic blasts at Jackass Flats in Nevada! Only time, of course, will tell whether future young of this species will show damage from those blasts.

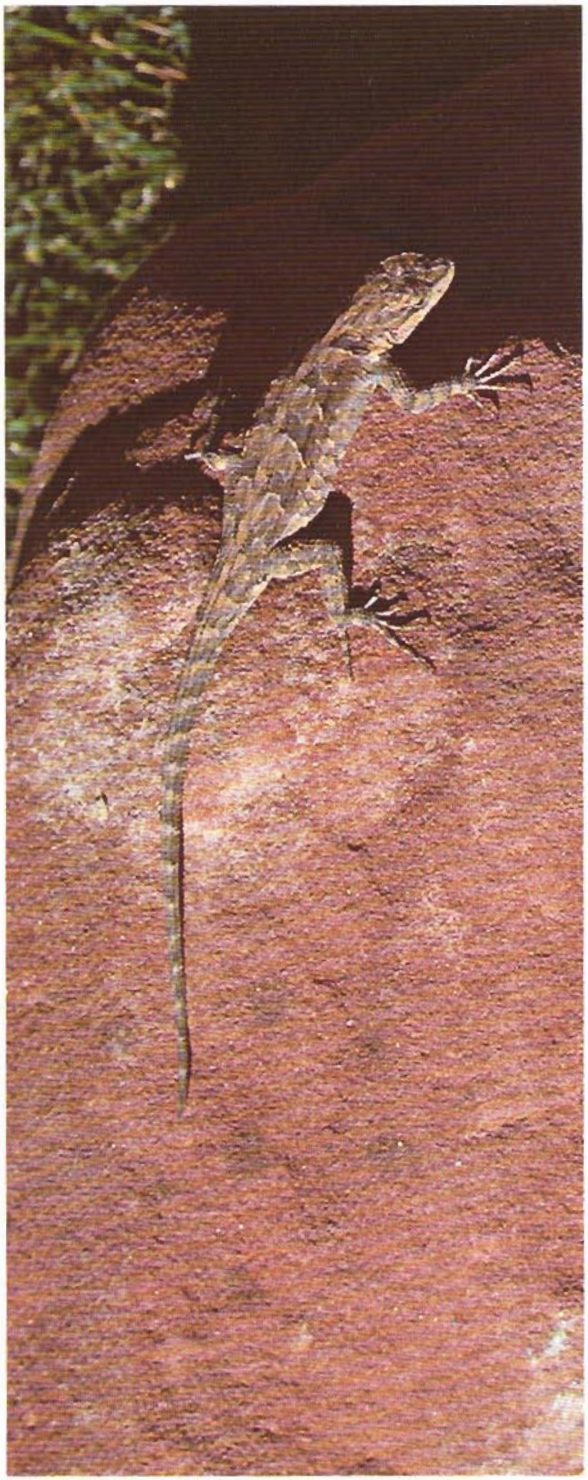
WESTERN BRUSH LIZARD *†

Urosaurus graciosus graciosus

THE BRUSH LIZARD IS WELL CAMOUFLAGED, the general coloration blending well with the bushes in which it spends much of its time. It is long and slender, with a tail about twice as long as the body and a broad band of enlarged scales down the middle of the back. The male has a bluish or greenish patch on each side of the belly, lacking in the female. Both have throat patches of reddish, orange or lemon-yellow.

Foods include a wide variety of insects, spiders and occasional tender plants. Spending much time among desert shrubs, it finds many caterpillars and other larvae that would normally not be available to ground-dwellers. Like many small lizards, it is food for several animals, especially snakes and large lizards.

This is truly a desert species, being found where there is plenty of loose sand, along with creosotebush, burro bush, catclaw and mesquite. The creosotebush is especially favored and the lizard spends much of its time clinging to a branch, its body perfectly aligned, making it difficult to see. It hangs head downward, poised to run if need arises. If the nights are warm, it may even sleep there. It occasionally can be located after dark by searching the bushes with the aid of a flashlight. It is heat tolerant, and takes full advantage of the fact that air temperature .61 or .91 meter (2 or 3 feet) above ground in a bush is a few degrees cooler than ground temperature. On windy days it takes refuge in small animal burrows, or may bury itself in the sand.



TREE LIZARD

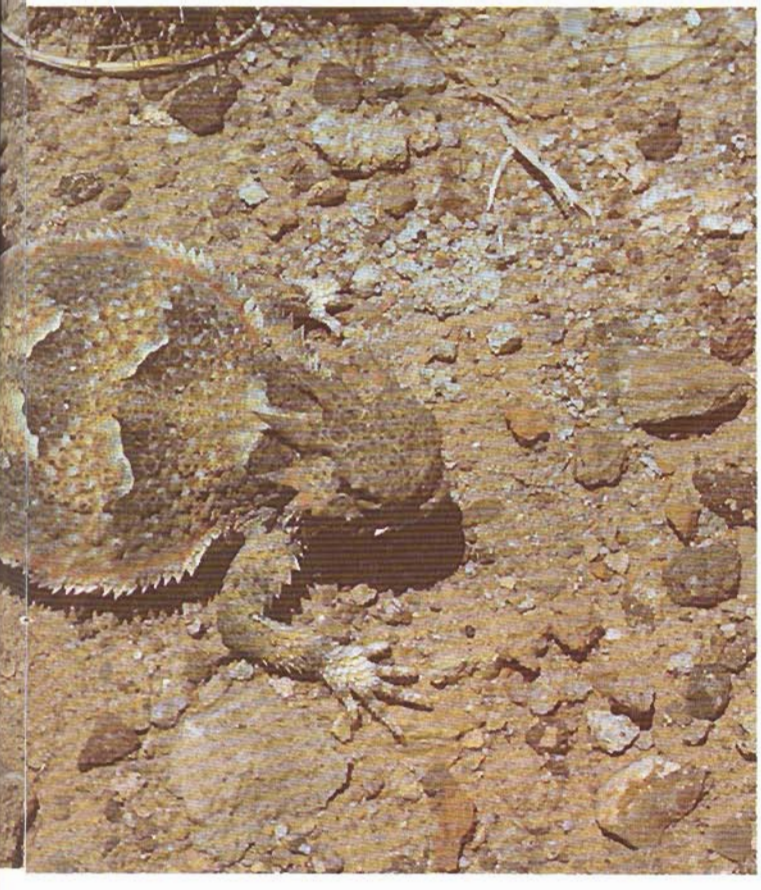
Urosaurus ornatus

THIS IS A DIFFICULT LIZARD TO IDENTIFY in the field. Its coloration tends to be confusing as it may be tan, dark brown, gray or sooty. Frequently there is a rusty area at the base of the tail above. On the throat of the male is a blue patch, and there are vivid blue or blue-green patches on the belly. The female has no belly patches, but does have a yellow, orange or white throat. Down the middle of the back is a band of enlarged scales, separated by a center stripe of smaller scales.

It is usually found near streams, springs or moist areas, preferring cottonwood, mesquite and tamarisk growth, although not restricted to

such places. Here the lizard finds the various foods it needs, such as insects, flies, ants, worms, spiders and other invertebrates.

It may seem a bit strange to see a lizard take to the trees when threatened, but such happens with this one. A good climber, it spends much of its time in trees or on rocks. Its coloration blends with the surroundings, making it difficult to see except when in motion. It appears to have confidence in its camouflage, as it is not especially wary if approached, but will watch with considerable interest to see what is going to happen. Its agility in the trees make it rather difficult to catch. However, in more open situations, hawks, snakes, predatory lizards and the most skilled lizard catcher of all —the roadrunner—take their toll.



SOUTHERN DESERT HORNED LIZARD *†

Phrynosoma platyrhinos

GENERAL COLORATION OF THIS BROAD, flat-bodied lizard frequently varies to match the color of its habitat, making it hard to see except in motion. One was found almost as black as the lava rock where it lived. Not a fast runner, it feeds on insects and other small invertebrates that are not too active, such as ants (a favorite) and beetles.

Because of the protective "horns" it has fewer threats to its life than most other lizard species. It does have some snakes and large predatory lizards to fear, but is difficult for them to swallow. Of course, there is always the roadrunner to be considered—the lizard nemesis.

It is found in washes and around the edge of blow sand areas where creosotebushes and cacti grow. Here it likes to climb onto a low rock and bask in the sun. If the sun should get too hot, it frequently buries itself in the sand with only a bit of head showing, or moves into the shade of a bush. When frightened it usually heads for a nearby bush, where filtered sunlight makes it difficult to see. If handled, it puffs up and may express its feelings by hissing. When sufficiently molested it is capable of forcing a tiny spurt of blood from its eyes.

This reptile is a favorite with youngsters, although many know it only by the name of "horny toad." The lizard is easy to capture and often is kept in captivity as a pet. Here the diet must include large numbers of ants if it is to live long. Unfortunately most children do not know about this requirement, thus some pets are lost. While it seems to tolerate being handled, it should be studied, enjoyed and in a few days released in its original surroundings.

DESERT NIGHT LIZARD *†

Xantusia vigilis vigilis

CHANCES ARE YOU WILL NEVER SEE this tiny lizard, as you probably won't be out in the desert at the same time it is. Nor are you likely to see it anyway, as it appears at night only in certain types of habitat. However, the lizard is quite common.

The female does not lay eggs but gives birth to two young in September, the lowest reproduction rate of any lizard in the desert. Enemies are numerous, and the worst of the lot seems to be the desert night snake. The grasshopper mouse also enjoys dining on it.

The lizard is primarily at home around the yuccas—the Joshua tree and Mohave yucca making up the major portion of its known plant environment. It lives under the loose bark of down limbs and trunk of the Joshua tree, and around the base of the yucca. It sometimes chooses an old packrat nest as a home, where it is safe from most predators. Its food is made up of small forms of animal life, as it is too tiny to swallow anything very large.

It is active in winter long after other lizard species have gone into hibernation. It selects piles of debris, branches and the like that furnish good insulation against cold. Here it dens up, usually with others of its kind. As many as 30 to 40 may be found using the same winter shelter, and apparently all get along very well together. However, in spring the lizard becomes anti-social and fights others away from its chosen territory. If it doesn't meet with disaster, it may live as long as four years.

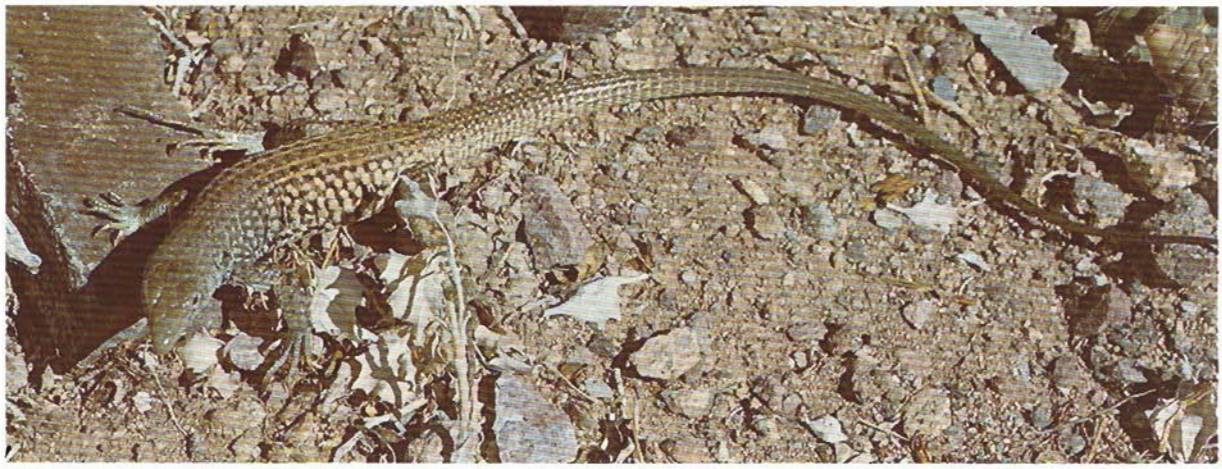
GREAT BASIN WHIPTAIL *†

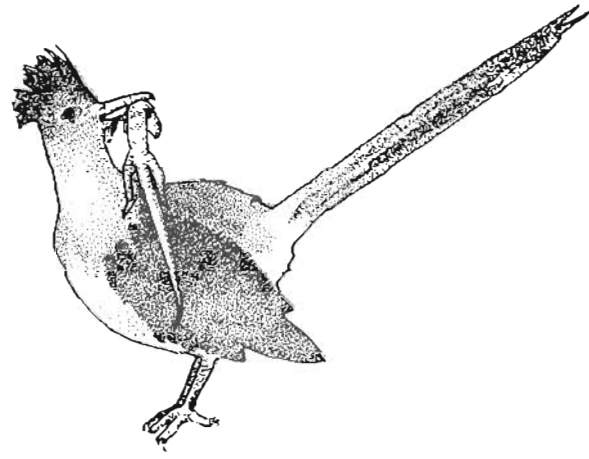
Cnemidophorus tigris tigris

THE WHIPTAIL IS STREAM-LINED, its slender body, whiplike tail, and long hind legs with long toes giving a strong hint of its speed. There may be stripes present on the back, but these often fade with age. There are scattered spots of blackish on cheek and throat, and usually vertical dark bars on the sides. The young have one obvious difference in appearance from that of the parent—their tails are bright blue.

Food consists of various kinds of insects and larvae, small lizards, spiders and scorpions. It can climb and occasionally gets into bushes after caterpillars. While it obtains water whenever available, most water needs are met by the foods it eats. Its enemies are numerous and the whiptail needs all of its speed and agility to escape hungry hawks, snakes, and other animals.

It likes open desert where there are not too many plants to hinder sunning. The ground must not be too sandy, as firm soil is necessary for good footing. Given these conditions it can quickly change direction while running at top speed. It has a habit of running a short distance, quickly slowing almost to a halt, then creeping forward in a jerky manner with tail dragging. If frightened, it darts away at high speed, tail held well above ground. Reaching a sheltering bush it usually pauses long enough to look back at what caused the disturbance, and then seeks protection. The whiptail requires fairly high temperature to be active. It becomes somewhat sluggish if the temperature drops below 38° C (100° F) — 104 is the optimum.





BANDED GILA MONSTER

Heloderma suspectum cinctum

THIS LIZARD IS A GOOD EXAMPLE of how an animal can sometimes live in the desert with an apparent minimum of effort. It is seldom seen wandering around, yet appears to have no great problem in getting what it needs for survival. The general appearance gives no hint as to how it lives. The large, heavy body with its stout legs and thick, swollen tail shows no need for speed or agility. Obviously it couldn't run fast enough to catch many small animals, although it can move very quickly to twist or bite. Its color pattern of black and pink, orange or yellow bead-like scales does help make it hard to see in the shadows, giving some protection, but its credentials for making a living appear limited. It certainly lives a leisurely life.

It breeds in May and June. The female then selects a damp sandy area, digs a hole and deposits her eggs, sometimes as many as 12. The hole containing the eggs is dug with a southwest exposure to take full advantage of the sun's warmth. The eggs hatch about 30 days later. The young are 8 to 10 centimeters (3 to 4 inches) in length and hatch fully capable of taking care of themselves. The food list is varied. It is partial to eggs, especially those of quail, but eats a great variety of small animals such as mammals, birds, lizards and insects of one kind or other. Food is located by odor as much as by sight. It will drink water when available, but depends a lot on moisture found in its food. Enemies are not numerous—large hawks and owls, the roadrunner (a threat to the young lizards) and man. So many have been killed by people it is now protected by law. Habitat includes much of the lowlands of the Lake Mead region and the nearby Valley of Fire State Park.

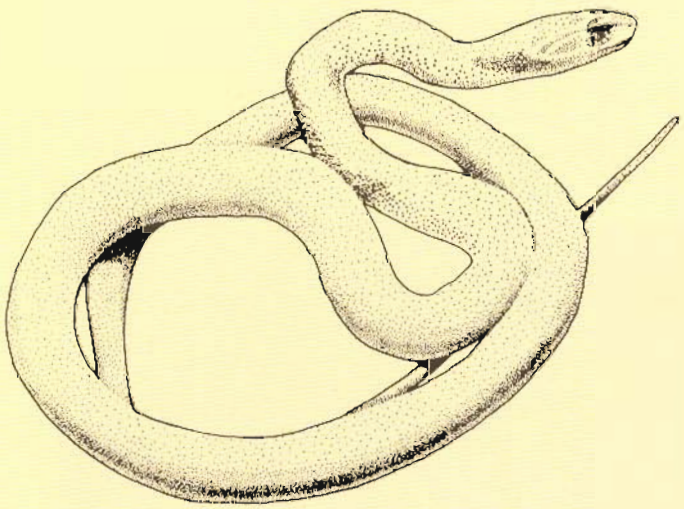
The lizard likes canyon bottoms and washes, where there are natural holes and crevices in which to hide. It digs burrows or uses those of other animals but may sometimes be found in woodrat nests. It is often out at dark or soon after warm summer rains have fallen. It is mostly diurnal in cooler weather and spends considerable time basking in the sun. It cannot tolerate more than about 43° C (110° F) for any considerable length of time, so extreme heat is avoided. It hibernates in winter and often remains holed up in summer in some protective burrow when the region becomes hot and dry and food is difficult to obtain. During this time it lives off fat stored in the thick tail.

There are many stories of how deadly Gila Monster venom is. While it is dangerous and very potent, there are few records of death

from the bite. The poison glands are near the lower jaw, but there are no poison-conducting fangs. Instead, the teeth are grooved front and back, the poison flowing out on the floor of the mouth when it bites. It does not just bite and let go, but holds on with a tight grip, all the time slowly chewing. This allows some poison to enter the wound. At times it may turn on its back when it bites, thus increasing the chances of more poison being absorbed. The poison acts on the respiratory system, causing the victim to breath faster, then follows a gradual paralysis. The heart finally loses strength and fails, if death by paralysis doesn't come first. Although the animal is not short tempered or likely to bite, no one should be foolish enough to suppose it won't! It is possible poison was much more important to the Gila Monster thousands of years ago than now, as the lizard does not rely on it very much.

The main thing to remember when dealing with this creature is to simply leave it alone. Certainly it wants no part of you!

THE SNAKES



Snakes are the attention getters, but at the same time the least understood of our reptiles. This booklet includes those known to occur in the general desert region which takes in Lake Mead National Recreation Area and much of extreme southern Nevada and northwestern Arizona. Most of the species found here are also in Death Valley National Monument to the west in California, Joshua Tree National Monument in southern California, and the nearby Valley of Fire and Red Rock State Parks of Nevada. While the Recreation area includes portions of the high plateau country at the western end of the Grand Canyon, snakes from those higher elevations are not included.

Of the 21 kinds of snakes known to occur in our desert, 13 are non-poisonous; 3 are mildly poisonous but no threat to people; 5 are poisonous and dangerous.

In the early days of the rise of Lake Mead there were several records of the western yellow-bellied racer, *Coluber constrictor mormon*, but there have been none in the past 25 years. Flooding the river valleys may have destroyed its only suitable habitat in this part of the desert, and it is not included in the species accounts. Three additional species may occur here, but records are lacking. They are the striped whipsnake *Masticophis taeniatus*, Utah blackheaded snake *Tantilla planiceps utahensis* and regal ringneck snake *Diadophis punctatus regalis*. The whipsnake may occur around the Muddy River Valley near Overton, Nevada, as it has been reported in the near region. The ringneck and blackheaded snake may be living in the Newberry Mountains and nearby region close to Davis Dam, as the habitat is suitable.

The Colorado River has had a decided influence upon the distribution of some species and today forms a barrier separating three closely related subspecies from intermingling. Four on the Nevada side of the river are the desert glossy snake, the Great Basin gopher snake and the desert night snake. On the Arizona side are their almost identical counterparts—the Arizona glossy snake, the Sonoran gopher snake and the spotted night snake.

Every snake species has a habitat preference, but there are few places in the desert where snakes are not found. Most prefer areas where vegetation of one kind or another is fairly common. The reason is quite apparent. Without plants to produce seeds, leaves, flowers and buds, there would be virtually no insects, spiders, small rodents, birds and lizards. Snakes would simply be without a primary source of food. Thus, if you wish to

see them, investigate areas with at least some low bushes and other plants, boulders, rocky outcrops, gravelly washes and down material of some sort. Some like blow sand, but most snakes shun the loose sand because of lack of traction. Most are nocturnal and hide during daylight hours. The snake that decides to do his hunting in bright sunlight runs the risk of becoming a meal for hawks, roadrunners and other snake-eating predators.

Like other reptiles, the snake is a cold-blooded creature. That is, the temperature of its blood increases and decreases in response to the temperature of its environment. It becomes quite active during the spring, summer and early fall months, but hibernates in winter. Contrary to popular belief, it does not lie out in the open, basking in the glare of the hot summer sun. When desert sun temperature gets above 35° C (95° F), the snake becomes very uncomfortable and soon heads for shade. This writer has seen a rattlesnake die from too much sun heat by being kept away from shade for 15 to 20 minutes. Having no pores in its skin, the snake cannot perspire when it gets too hot, and when body wastes build up from the heat, it soon dies. Thus when sun heat becomes oppressive shade is necessary, and often the reptile will simply find a convenient mammal burrow to use as a temporary shelter.

Snakes have belly scales, called "scutes" which are of assistance in traveling. Even without functional limbs they have no real difficulty moving ahead as long as the surface is uneven or rough enough to furnish traction. "Sidewinding" is used by some when traveling on slick surfaces or on loose sand. Some progress rapidly, seeming to glide. Others have bodies too heavy to move very fast.

The tongue of the snake is a most interesting organ. It is forked, a fact which led to the belief that it is a stinger of some sort. It is the snake's chief aid in finding out about the world around him. It detects odor, taste and feel, and may even have something to do with hearing, although some argue against the latter. While investigating some object, or when hunting, the sensitive tongue samples the air, then is drawn back into the mouth. Lying in the roof of the mouth are two highly sensitive "pits" called Jacobson's Organs which analyze odors. The tips of the forked tongue flick upward into these pits, and the snake has received the information he needs. A snake has no eyelids. Eyesight is well developed, especially in species that are active at night. If angered, some snakes hiss; other expel air, making a sound somewhat like air escaping from a tube. Some simply make no sound, but express their feelings by vibrating their tails, jerking their bodies about, or coiling in a defensive attitude.

Most are egg layers, and some species lay large numbers. Usually the eggs are laid in sand or under some kind of protective material. In most species, the female does not guard her eggs against enemies, but goes on her way, leaving the eggs and the new-born young to shift for themselves. In some instances the eggs develop and hatch within the mother, who then gives birth to her

young. The newly born young are capable of taking care of themselves. Breeding is in spring and early summer, and the young make their appearance into a world full of danger in August and September. If they survive such enemies as hawks, owls, coyotes, foxes, badgers, other snakes, predatory lizards, the ever deadly roadrunner, and of course man, they may live long enough to see the next spring and have a reasonable chance of growing to maturity.

Foods are of many kinds. Almost every insect, spider, scorpion, mouse, woodrat, kangaroo rat, antelope squirrel, rabbit, small bird, lizard or even snake, is part of the diet of some species. Some snakes kill by squeezing the prey to death; others eat the prey while it is very much alive; some use poison to kill the victim before attempting to eat it. Not having the ability to swallow, the snake must engulf its victim. If the prey is too large to be easily engulfed, such as a mouse or woodrat, the snake has developed an excellent way to overcome this problem. Its jaws unlike those of mammals, are not held together in sockets. This allows the jaws to be spread apart as wide as the skin and muscles will allow. Taking the head of the prey in its mouth, the snake forces its jaws forward, first one side and then the other. Its recurved teeth hold and the snake again moves the jaws forward. Slowly it literally crawls around its meal with the muscles of the body finally forcing the prey into the stomach.

The rattlesnake has the most intricate and efficient special equipment of all our snakes. Its poison equipment is a wonder of precision. The poison sacs are located above the mouth and behind the eyes. Small tubes lead from the sacs to hollow fangs located in the front of the mouth. When not in use the fangs are folded up against the roof of the mouth and covered by a membranous sheath. As the snake strikes, the fangs are instantly erected, the prey is hit, poison is injected into the victim's body, the fangs are withdrawn and folded into the mouth again. All this happens in a split second. The fangs are not permanent but are shed periodically with new ones taking the place of the old. The snake also has a "pit" located between the eyes and nostrils and somewhat below them that rivals some of the most delicate instruments man has invented. The "pits" have nerve tips inside which are extremely sensitive to body heat. This enables the rattler to strike very accurately down the "heat beam" given off by a mouse or some other warm blooded prey—a great aid when hunting at night.

Many stories have been told about the rattles on the rattlesnake. Contrary to common belief, one cannot tell its age by counting its rattles. Since the snake's skin does not grow it must be shed at intervals as the body becomes too large for it. When skin is shed a new segment of the rattle is left behind. Inasmuch as it may outgrow the skin more than once a year, the rattles only tell how many times this shedding process has taken place.

While it is unlikely you will meet a rattlesnake when hiking in the desert, it can happen. As a matter of precaution, it is well to observe these simple rules: Don't walk through brush when you can walk around; don't step over large rocks, etc., without checking to see that nothing is lying in the shade on the other side; and don't put your hands into holes or over rock ledges when you can't see what you are doing. You might find the place already occupied!

One additional warning. Sometimes someone kills a rattlesnake and cuts off the head, leaving it on the ground. Be careful and don't handle it—the head is still able to bite for several hours after being severed from the body.

WESTERN BLIND SNAKE*†

Leptotyphlops humilis

THIS IS THE SMALLEST SNAKE of the desert, and one that is most difficult to find. Looking somewhat like a large earthworm, it is sometimes called "worm snake." Coloration may vary from pink to brown or gray. The head and tail are blunt and quite similar in appearance. The eyes are very small and show only as dark spots under the head scales. On the tail tip is a tiny spine that is used in traveling. Adults seldom grow as long as 45 centimeters (18 inches); most are much smaller. Breeding occurs in early spring, and the female lays as many as four eggs.

The blind snake prefers to live around rocky hillsides having patches of loose sand, especially if near a permanent or intermittent stream. It is probably widespread, but records are few. Thus far there have been only two records from this region; one from near Overton in 1939 and the other from near Lake Mohave in 1978.

It is an excellent burrower and can disappear in a sandy area in astonishingly fast time. This ability stands it in good stead as it has many enemies, among which are other snakes, predatory lizards, owls and various mammals, one of which is known to be the coyote. It has been found caught in the web of a black widow spider.

The blind snake hunts only at night and prefers early evening, especially when the air temperature is around 27° C (80° F). It travels rather slowly, its tongue flicking out to tell of things the sightless eyes do not record. If it finds an ant hill, the evening will be a marked success, as it invades the colony to eat its fill of ants and their eggs. Its tough scales easily resist the attack of aroused ants. Termites are another favorite food.

DESERT ROSY BOA *†

Lichanura trivirgata gracia

IT MAY SEEM STRANGE to learn a member of the boa family is living in the desert. Usually we hear or read about the boa constrictor and how it lives in warm jungles far to the south. However, the rosy boa is a true boa—it just lacks the size of its cousin, being only about .61 to .91 meter (2 to 3 feet) long. Coloration may vary from slaty to tan or pinkish, but it is always identified by three broad, lengthwise brown stripes. The body is stocky and powerful with smooth scales. Pupils of the eyes are vertical. The boa is not an egg layer, and the young, usually 15 to 38 centimeters (6 to 15 inches) in length, are born alive.

It may be found in moist situations in the desert and is especially partial to areas around springs or permanent streams. Like most reptiles, it has its share of enemies, and is most vulnerable before reaching adult size. It hunts in early evening and at night with small mammals and birds the major portion of its diet. It kills its prey by constriction.

This is an extremely gentle snake and seems to enjoy being handled. It rarely bites, although it could do so, as it has teeth. If disturbed it sometimes rolls into a ball with its head on the inside of the coils, the rather blunt tail sticking outside. It seems to operate on the principle if any harm is to come, the tail should be the target and not the head! It can burrow, and spends many daylight hours underground.

Only two records thus far have been reported from this region. One came from near Searchlight, Nevada, only a short distance from the Newberry Mountains where others may eventually be found. The second came a few miles south of Lake Mead in Arizona.

WESTERN LEAF-NOSED SNAKE*†

Phyllorhynchus decurtatus perkinsi

THIS SMALL, PALE, BLOTCHED SNAKE is rather stubby in appearance, with a noticeable enlarged scale on the blunt nose. Ground color may range from tan or yellowish to pinkish or light gray. The blotches are always brown. The eyes have vertical pupils, indicating nocturnal habits. It has smooth scales. An adult may reach a length of 45 to 50 centimeters (18 to 20 inches).

Sandy or gravelly parts of the desert are preferred, especially where creosotebushes are found. It is a middle to low desert animal, and seldom reaches an elevation of 915 meters (3,000 feet). The Lake Mead region is at the northern edge of its range. It feeds on small lizards and finds their eggs much to its liking. As might be suspected, the nocturnal gecko lizard is a favorite food of this night hunter.

The leaf-nosed snake is a very efficient burrower and the large, free-edged, enlarged scale on its nose makes an effective digging tool in the sand and soft soil. Hiding underground during the day, for many years it was thought to be very rare throughout its range. Now a better understanding of its habits proves it to be rather common; it is all a matter of searching for it at the right time of night and in the right places. It is a gentle snake, but does put on a very threatening display if frightened, coiling and striking with a low hiss if cornered. Often the strike is made with the mouth closed! It doesn't seem to mind being handled, but will try to escape if given the opportunity.

RED RACER*†

Masticophis flagellum piceus

GENERALLY WE SEE THIS REPTILE only after it is in motion, as this is the fastest moving snake in the desert. The long, slender, whip-like body can cover ground at a speed of around 11 kilometers per hour (seven miles per hour) if the terrain is suitable. It is the snake most commonly reported in this region.

Coloration varies from gray and tan to pink, with black crossbars always present on the neck. Older snakes have a distinct reddish appearance. It grows to a considerable length, reaching as much as 2 meters (six feet), although individuals of such size are seldom found.

Its choice of food is varied, including insects, birds, lizards, other snakes and small mammals. Whiptail lizards are on the preferred list, as are white-footed mice. A good climber, it is sometimes seen in the larger shrubs, checking out bird nests in a search for nestlings. It does not kill by constriction, but simply uses the weight of its body to hold the prey helpless while swallowing. Hunting may take place at almost any hour from early morning to late evening. In spite of its speed and size it has to watch out for hawks and other predators, including one of its neighbors—the kingsnake.

The snake is nervous and has a bad temper. It will bite fiercely when captured, striking viciously and twisting its head when it bites, so that its sharp teeth often tear the flesh of the victim. Caution must be exercised when handling it as the bite can be painful. It often shows displeasure by vibrating the tail, and if pressed too closely will seek the nearest rodent burrow for refuge.

MOJAVE PATCH-NOSED SNAKE*†

Salvadora hexalepis mojavensis

THE PATCH-NOSE IS SIMILAR in appearance to a racer and is a close relative. It has the long, slender, whip-like body and even has a broad stripe down the back that adds to the resemblance. It is easily mistaken for one of the striped racers so common in parts of the West, and is sometimes confused with the garter snake. This stripe, either yellow or tan, is edged with a darker color and is the most prominent marking on the snake. Sometimes the stripe is pink in color and crossbands tend to obscure it. The scales are smooth, a characteristic of many fast-moving snakes. An enlarged, flattened, patch-like scale or plate with free edges curves backward over the top of the nose, looking as though Nature put it there as an after-thought. Adult size is around .91 meter (three feet).

It normally ranges through creosotebush country and lower rocky slopes of the desert mountains. An excellent hunter, during the heat of summer months it chooses the cooler hours of morning and late evening, when prey are most active Mice and other small mammals furnish the major part of the diet, although lizards of various kinds are also eaten. It is believed the snake also eats lizard eggs. Because it can climb, it may feed on bird eggs and their young. It has its quota of enemies, with other large snakes and owls taking their toll.

It is difficult to catch this snake if it is warm and fully active. A fast traveler, it takes refuge among the desert shrubs. Cornered, it will defend itself vigorously and may bite. However, such bites are harmless and seldom worse than pin pricks.

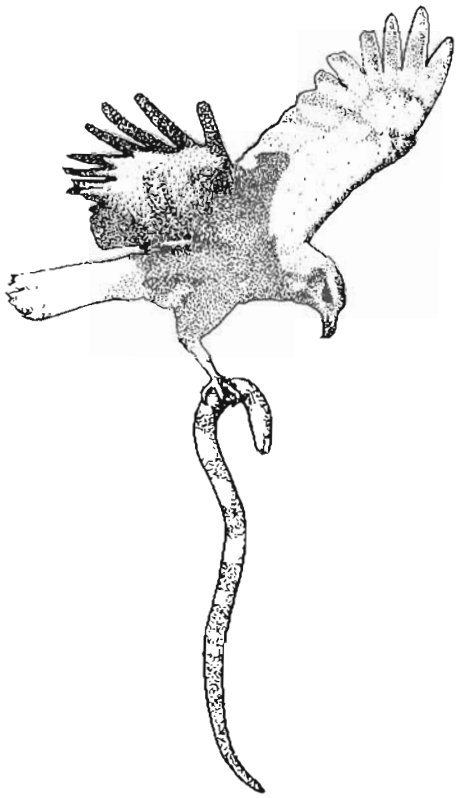
GLOSSY SNAKE*†

Arizona elegans

THIS LOOKS SOMEWHAT LIKE a faded gopher snake, but is much smaller. The general coloration is quite varied and may range from cream to light brown, yellowish-gray or even pale pink. It has narrow, dark-colored blotches along the back and still smaller ones along the sides. The size of a fully grown adult is around 65 to 120 centimeters (26 to 48 inches). Because of its bleached appearance it is sometimes referred to as the "faded snake." The glossy scales have resulted in its common name.

It is found in a variety of habitats, varying from brushy areas to bare desert flats. It especially likes open areas with sandy or soft soil and not too many rocks. Here it finds soil suitable for burrowing and is quite efficient at doing so. It is rather timid and stays underground during daylight hours, coming out in early evening and at night to hunt. The food list is extensive, primarily made up of lizards, snakes and small mammals. The snake is mild tempered and does not show much concern when handled.

The Colorado River has had a decided influence upon distribution of the glossy snakes. The desert glossy snake, *Arizona e. eburnata*, is found on the Nevada side of the river, while its close cousin, the Arizona glossy snake, *Arizona e. noctivaga*, is found just a few hundred yards across the river on the Arizona side. Even when seen together, the two snakes are difficult to tell apart. Neither likes to take to water, so there is an unanswered question as to when and how the species became separated and developed into two races.



GOPHER SNAKE*†

Pituophis melanoleucus

IT IS A SAD FACT this very beneficial snake is frequently killed because it is mistaken for a rattlesnake. The coloration and markings of the two snakes are similar. It may be yellowish or cream-colored and have brown, reddish-brown or black saddle-like blotches along the back. Smaller blotches are along the sides. It is a large snake, powerfully built, with adults sometimes reaching a length of more than 2 meters (six feet); the young are 20 to 30 centimeters (8 to 12 inches). It breeds in April and early May, and the female may bury as many as 15 or more eggs in loose sand at a depth of several inches.

It lives over much of the desert whether in washes, rocky areas, around brushland or farmland. A very good climber, it uses this ability to good advantage to obtain birds and bird eggs. Its principal foods, however, are various rodents, rabbits and lizards. It kills its prey very quickly by constriction, thus enabling it to swallow its meal in leisurely fashion. Enemies are plentiful and the young snake must exercise caution when hunting for food. This becomes less of a problem as it reaches maturity.

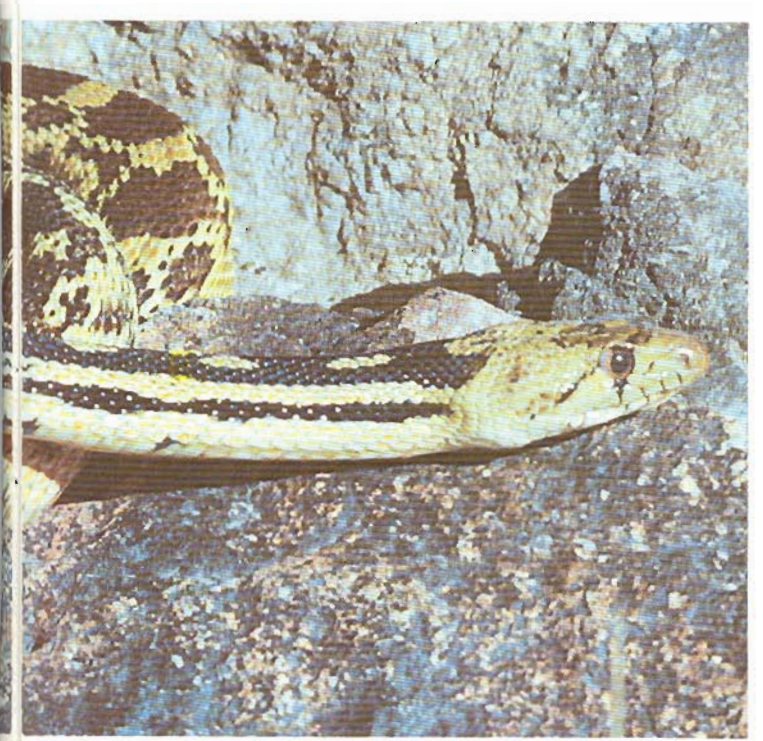
This is a gentle snake and normally easy to handle. If startled or frightened it is likely to coil in a threatening manner and strike viciously, giving a loud hiss that sounds much like escaping steam. This characteristic has given it another common name of "blow snake." When it finds it is not going to be hurt, it seems to actually enjoy being handled.

It ranges over southern Nevada and Arizona within the recreation area. On the Nevada side of the Colorado River is the Great Basin gopher snake, *Pituophis m. deserticola*, while a closely related form—the Sonoran gopher snake, *Pituophis m. affinis*, is found on the Arizona side.

CALIFORNIA KINGSNAKE*†

Lampropeltis getulus californiae

KINGSNAKES ARE COMMON IN OUR REGION. They are also about the easiest to identify, as there is no mistaking the vivid pattern of alternating black and white bands and broad white bars on the head. They are much larger than most of their neighbors, the adult sometimes reaching a length of more than 2 meters (six feet), although the average length in our part of the range seems to be around 1 to 2 meters (four to five feet).



It likes washes, stream courses, canyons and farm lands, especially if there are shrubs that offer protection from the sun and its enemies. Normally it stays on the ground, but it can climb. The list of foods it eats is extensive, as it seems to like almost anything that moves. Lizards, other snakes, small mammals, birds, frogs, and eggs make up most of the diet. It will even eat its own kind, but its chief claim to fame is that it can, and occasionaly does, kill and eat rattlesnakes. While the kingsnake doesn't go around looking for rattlers to eat, if it is hungry and happens across one that isn't too big to engulf, it is good-by rattlesnake! It kills its prey by constriction and shows no apparent ill effects if bitten by a rattler.

Weather conditions pretty much control when you may find the kingsnake moving about. Usually active in early morning and late afternoon, if the day is very hot it uses the cooler hours of the night. It is a gentle snake, but occasionally may bite when captured. When angered it may hiss and vibrate its tail much like a rattler. It is an especially beneficial snake and one that merits complete protection —but seldom achieves it.

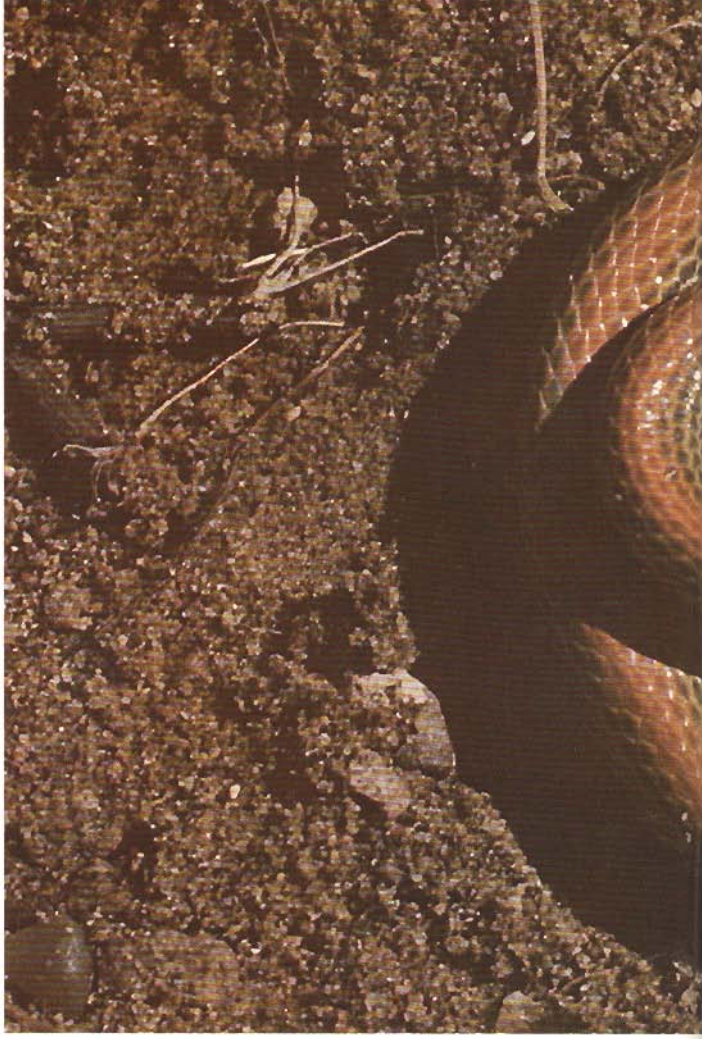
WESTERN LONG-NOSED SNAKE*†

Rhinocheilus lecontei lecontei

THIS RATHER CONFUSING SNAKE may have either of two entirely different color patterns and markings. The one most likely to be seen in our region has contrasting dark and light bands, although there may be some red scales in the interspaces. The second color phase is speckled with black blotches down the back, alternating with narrower bands of red and yellowish-white. The belly is yellowish with a few dark spots. Both snakes are characterized by a pointed snout, with the head about the same width as the neck. It is slender and when adult its length ranges from 50 to 100 centimeters (20 to 40 inches); the young 15 to 20 centimeters (6 to 8 inches).

Although found throughout much of the desert, it seems to prefer moist areas, especially around stream courses and irrigated fields. Plant growth is more abundant in such situations, thus there are more small rodents, lizards and insects, to furnish a good selection of food. Most records of this snake have come from around the farmlands near Las Vegas Wash and in the Muddy River Valley near Overton, Nevada.

The long-nosed snake is sometimes confused with a rather close relative, the kingsnake. Not only does it look similar, but it has similar hunting habits and kills its prey by constriction. It differs in some other habits, however, as it is a good burrower and spends daylight hours underground. Occasionally it is found hiding under debris of various kinds. It comes out to hunt about dusk and continues nocturnal activities until dawn. When captured it is easy to handle and seldom shows anger, but has been known to bite if the handler is too rough.



WESTERN GROUND SNAKE*

Sonora semiannulata

HERE IS ANOTHER OF OUR VERY SMALL and harmless snakes. Its coloration varies considerably, depending on where it occurs in the Great Basin and Southwest. In some areas it may have dark crossbands encircling the body forming "saddle" marks, or there may be no pattern markings at all. In our region it usually has greenish-gray or bluish-gray sides with a broad reddish stripe down the back. Each scale has a small dark blotch on the anterior portion. The scales are very smooth and glossy, characteristics of an active snake. The snout appears somewhat pointed. Total length of adults range from 20 to 50 centimeters (8 to 20 inches).

Being such a shy snake it remains well hidden during daylight hours, coming out to hunt only at night. Foods include such things as spiders, centipedes, crickets, grasshoppers and insect larvae that are commonly found around stream courses, sand hummocks and rocky hillsides. It often burrows in sand to escape detection. If threatened it can disappear in a sandy area in only a few seconds, seeming to literally melt into the loose sand.

Like its cousin, the shovel-nosed snake, the ground snake is often mistaken for the poisonous coral snake. A lady in Boulder City called one morning and asked in a very agitated voice if someone could come to her house quickly—a coral snake was about to kill her cat! As suspected, her coral snake turned out to be the brightly colored ground snake. It took a bit of demonstrating to convince the lady this timid snake was harmless and that the coral snake isn't found here. Yet hardly a year passes that someone doesn't report seeing and killing one of these little reptiles in the mistaken belief that it is poisonous.

MOHAVE SHOVEL-NOSED SNAKE*†

Chinonactis occipitalis occipitalis

THIS IS ONE OF THE REALLY BEAUTIFUL snakes of the desert. Its general color may be whitish or yellow, with either black or brown bands encircling, or almost encircling, the body. Sometimes there are orange or red saddlelike markings between the black bands. It is small, only occasionally reaching a length of about 7 centi meters (18 inches). Due to its bright colors, it is frequently confused with the poisonous coral snake.

Unfortunately most people never see this snake because of its habits. It is restricted to the desert and prefers sandy areas, being especially partial to dunes, sand flats or rocky hillsides where there are pockets of sand among the rocks. Vegetation may be scarce or entirely absent where it chooses to live. Usually a few scattered shrubs, such as creosotebush and cactus, help supply protection and the insects, spiders, scorpions, centipedes and various kinds of larvae upon which it feeds. It has many enemies, with owls, large snakes and coyotes among those most to be feared.

The shovel-nose is a burrower and is out only at night. It is very active and can disappear with astonishing rapidity in loose sand. It does not tunnel in the sand, but literally "swims" through it. To do this feat, it has special physical characteristics. Its body is of almost uniform size from head to tail. The scales are smooth and glossy, keeping friction from the sand to a minimum. Its snout is flattened from top and bottom, somewhat like a shovel with sharpened edges. Sand cannot get into its mouth because the lower jaw is smaller and completely covered by the upper jaw. Special nasal valves keep the sand from clogging its breathing apparatus.

SONORA LYRE SNAKE*†

Trimorphodon lambda

THE APPEARANCE OF THE SNAKE may lead one to assume it is exceedingly dangerous. The body is slim and the neck is thin, but the head is broad with a blunt snout which many people believe is characteristic of a poisonous snake. The eyes appear somewhat large, with vertical pupils which close to mere slits even in subdued light. The general ground color ranges from light brown to gray. Blotches along the back are brown, edged with black. A dark, lyre-shaped mark on the head gives the snake its name. Full grown adults range in length from .61 to .91 meter (two to three feet).

The lyre snake is seldom seen in open desert, its preference being rocky canyons and boulder strewn hillsides. It is a good climber, and crevices among rocky outcrops furnish good hiding places. It is active in late evening and early morning hours at which time it hunts for small mammals and lizards.

If molested it can put on a show that would do credit to a rattlesnake. It will coil, strike viciously at the intruder, and in every way act out the part of a dangerous character. It does possess poison glands, but not poison conducting fangs. In the back of the mouth is a pair of enlarged, open-grooved teeth. When the snake captures its prey, the mouth is opened quite wide, allowing the grooved teeth to pierce the victim's body. Then, with a series of chewing motions, poison flows down the grooves into the bite. It takes only a short time for the poison to become effective. While fatal to small creatures, the poison is not considered dangerous to a person.

NIGHT SNAKE *†

Hypsiglena torquata

THE NIGHT SNAKE IS WELL NAMED as it roams the desert after dark, seldom being seem in daylight hours. Its coloration does not vary much, being either tan or gray with numerous dark gray or brown spots over the body, making it extremely difficult to see at night. Pupils of the eyes are vertical; the scales are smooth. Adults range in size from .3 to .6 meter (one to two feet) in length.

It may be found throughout most of the desert, but prefers rocky or sandy areas. It hides out during the day in rocky crevices, under rocks or down materials such as branches of mesquite and Joshua trees. Lizards make up the major part of its food, but it isn't choosy and accepts amphibians and insects when available. The night lizard is on the preferred list.

It is one of a group of reptiles often referred to as "rear-fanged snakes." It has enlarged, grooved teeth at the rear of the upper jaw that are used to conduct a mild poison into its prey. It is in no way dangerous to man, but certainly

can act the part when it feels threatened. It coils, its flat head drawn back to strike, and its appearance is forbidding. However, it just puts on a good show, as it is actually a rather gentle snake. It does not appear common in our region and observation records are few. On the Nevada and California side of the Colorado River we find the desert night snake, *Hypsiglena t. deserticola*, while a closely related form—the spotted night snake, *Hypsiglena t. ochrorhyncha*—occupies the Arizona side. Only minor differences in markings separate the two subspecies.

WESTERN DIAMONDBACK RATTLESNAKE*†

Crotalus atrox

TO LEARN THAT THIS SNAKE has thus far been found only in the southern part of the Lake Mead-Lake Mohave region will likely produce a sigh of relief from many visitors. To find that the reptile is also considered uncommon in our region will not prove a disappointment to most!

This is the largest snake in this part of the country, sometimes reaching a length of 1.8 to meters (six to seven feet). Its body is thick and muscular. The coloration is not striking, ranging from brown and gray to pinkish. There are "diamond" or blotch markings on the back and sides with light-colored borders. The scales over the body are peppered with small dark spots creating a speckled appearance. The tail has broad black and white rings which in some parts of the southwest have given rise to the name of "coon-tail" rattler.

Breeding occurs in the spring, and in late August or September the female gives birth to as many as 15 young. These range in length from 20 to 35 centimeters (8 to 14 inches). Food consists mainly of small to medium-sized mammals. A large diamondback can engulf a full grown rabbit with ease. Choice of habitat is varied, but is usually found around washes, rocky canyons and along the lower slopes of mountains.

This is one snake that seems to dare you to do something. It is quick tempered and strikes with little provocation. Often you hear the snake before you even see it, as it starts buzzing as soon as it knows you are approaching. This is a blessing, of course, but no indication that it is exhibiting kindly feelings toward you by sending out an early warning! It is simply a way of saying "you've come close enough!" The thing to remember is—the snake means it!

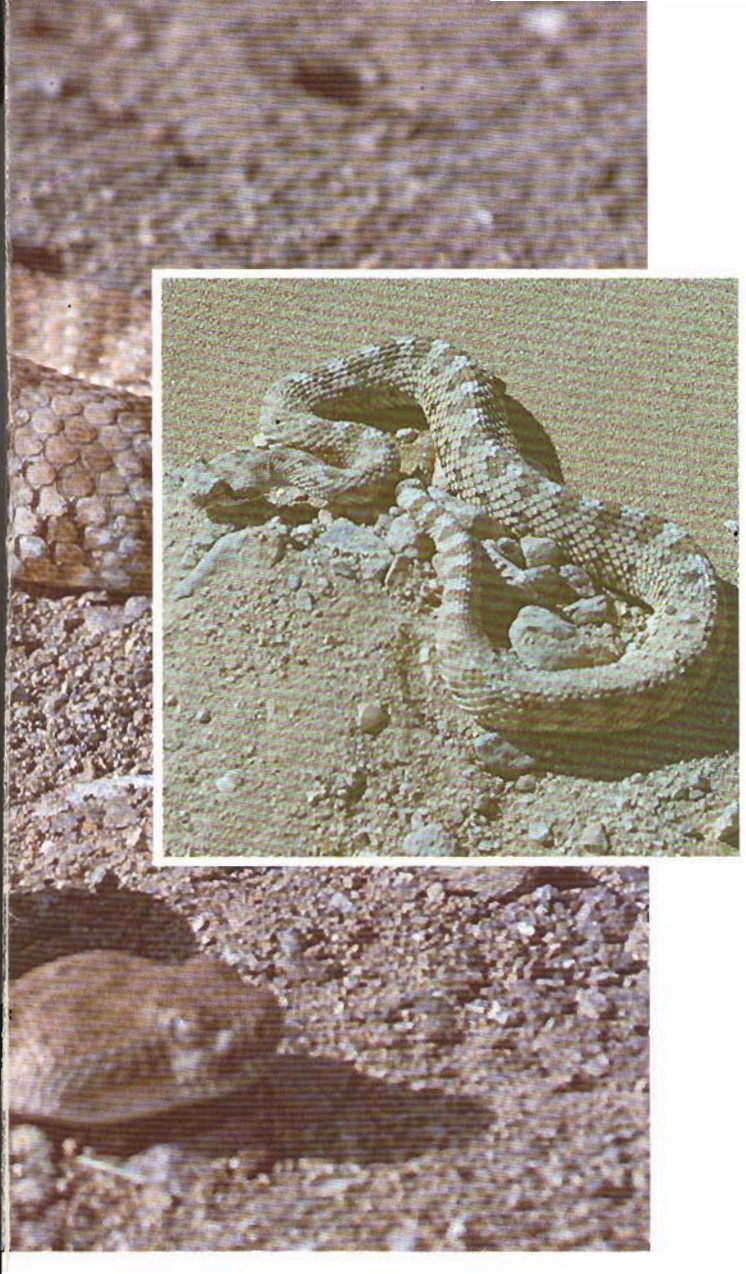
SOUTHWESTERN SPECKLED RATTLESNAKE†

Crotalus mitchelli pyrrhus

OF THE VARIOUS KINDS OF RATTLESNAKES found in this region, this is the one most likely to be encountered. Also the chances are good that you may not see it even should you come close enough to do so. The reasons are its coloration and habits.

The coloration varies considerably and is usually in harmony with the chosen habitat, thus making it more difficult to see. Colors may vary from gray to cream, yellowish, tan, brown or pinkish and are not intense. The scales are "pepper-marked," giving the snake an appearance somewhat like decomposed granite. Markings tend to be indistinct and usually consist of bands that become dark rings on the tail. Total length of the fully grown adult seldom exceeds 1 meter (four feet); the young from 20 to 30 centimeters (8 to 12 inches). Like most rattlesnakes, it is an efficient hunter and especially partial to small rodents.

It lives in dry washes and rocky areas in the mountains where it may sometimes be found quietly resting on a small rocky ledge. Alert and somewhat nervous, it will head for pro-



tective shrubs or rocky debris if given opportunity. It is no coward and will hold its ground if molested. If you should encounter one, simply remember to leave it alone, as it certainly wants no part of you and will gladly go its way.

Looking almost identical is the Panamint rattlesnake, *Crotalus mitchelli stephensi*. While its range commonly lies to the westward and in Death Valley National Monument, it is sometimes found in this general area, but records are few.

MOHAVE DESERT SIDEWINDER

Crotalus cerastes cerastes

THE SIDEWINDER IS IN MANY WAYS the most interesting and unusual rattlesnake. It is relatively short, with a thick body and a length of 45 to 75 centimeters (18 to 30 inches). Coloration tends to harmonize with its habitat, and may be anything from pale yellowish to pink or gray. While there are small blotches along the back, they are rather inconspicuous. The scales are noticeably rough. Like other rattlesnakes it gives birth to live young.

Hunting is at night and foods are typical of the rattlesnake clan—lizards and small rodents, especially mice and kangaroo rats. It is most often found in areas where wind-blown sand piles up around desert shrubs, especially the creosotebush and mesquite. In such places food and protection are easiest to find. Here it is frequently found coiled up in the shade, protected from the desert sun.

The peculiar mode of travel gives the snake its familiar name. Other snakes crawl, wriggle or glide their way forward; the sidewinder travels sideways. To do this it throws its head out in the direction it wishes to go, then uses it as an anchor while it loops the body sideways, making a long, graceful S-shaped mark on loose soil or sand. It then continues to repeat the process, producing a smooth, flowing motion as it moves along. This type of locomotion enables the snake to travel with ease on loose sand. The "horns" over the eyes have given it the commonly used name of "horned rattlesnake." These are actually specialized scales that can be forced down to cover the eyes as the reptile encounters obstructions in rodent burrows, such as gravel or roots, and serve as protection against drifting sand where it lives. It may burrow beneath blow sand deposits, and hikers in the desert should observe caution when walking across such areas.

MOHAVE RATTLESNAKE†

Crotalus scutulatus

THIS SNAKE IS OFTEN MISTAKEN for its larger cousin, the diamondback rattlesnake. However, the diamond or hexagonal-shaped blotches along the back of this repitle are well hikers in the desert.

The creosotebush country is preferred habitat, although there have been records in our region indicating that clumps of mesquite may attract it. Whether it likes mesquite because of the protective value or because mice and other food items live there hasn't been determined. It

defined and edged with light colored scales. Its general coloration is often quite varied, ranging from greenish-gray to brownish or yellowish tones.

The tail is banded with light and dark rings, the dark rings being narrower than the light ones. Length of the adult ranges from .61 to 1 meter (2 to 4 feet), with the male being somewhat larger than the female. Breeding takes place in the spring, and the female usually adds eight or more young to the desert wildlife scene in late summer. Its poison is of greater potency than other rattlers in this region, warranting special care on the part of is seldom found where the terrain is rocky or the vegetation is very heavy. Its primary range is the Mohave Desert, but it may also be found in the mountains rising out of the Mohave. It doesn't appear common in the Lake Mead region, and for some reason is seen more frequently in Arizona than in Nevada.

It is not one to go around looking for trouble. Neither will it run when trouble comes. Given the opportunity to do so, it will go its way peaceably, but is always ready to defend itself if necessary. It is surely one snake that is best left alone!

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