



*The Natural History  
Story of  
Chiricahua  
National Monument*

*by*  
**Earl Jackson**



*"Punch & Judy"*

Front and Back Cover Pictures Courtesy of: Richard D. Bucher



*The Natural History  
Story of*  
**Chiricahua**  
*National Monument*

*by*  
**Earl Jackson**

*Striped skunk*



Published in cooperation with the  
National Park Service by  
Southwest Parks and Monuments Association, Inc.  
(Formerly Southwestern Monuments Association)

Southwest Parks and Monuments Association  
Globe, Arizona 1970

Copyright 1970 by Southwest Parks and Monuments Association, Inc.  
All rights reserved. No part of this book may be reproduced in any form  
without permission in writing from the publisher, except by a reviewer  
who may quote brief passages in a review to be printed in a magazine  
or newspaper.

Library of Congress Catalog Card Number 74-75812

First Printing, 1970 — 10,000

Natural History Series No. 1

Southwest Parks and Monuments Association, Inc.  
(Formerly Southwestern Monuments Association)  
Globe, Arizona 85501

Printed in the United States of America

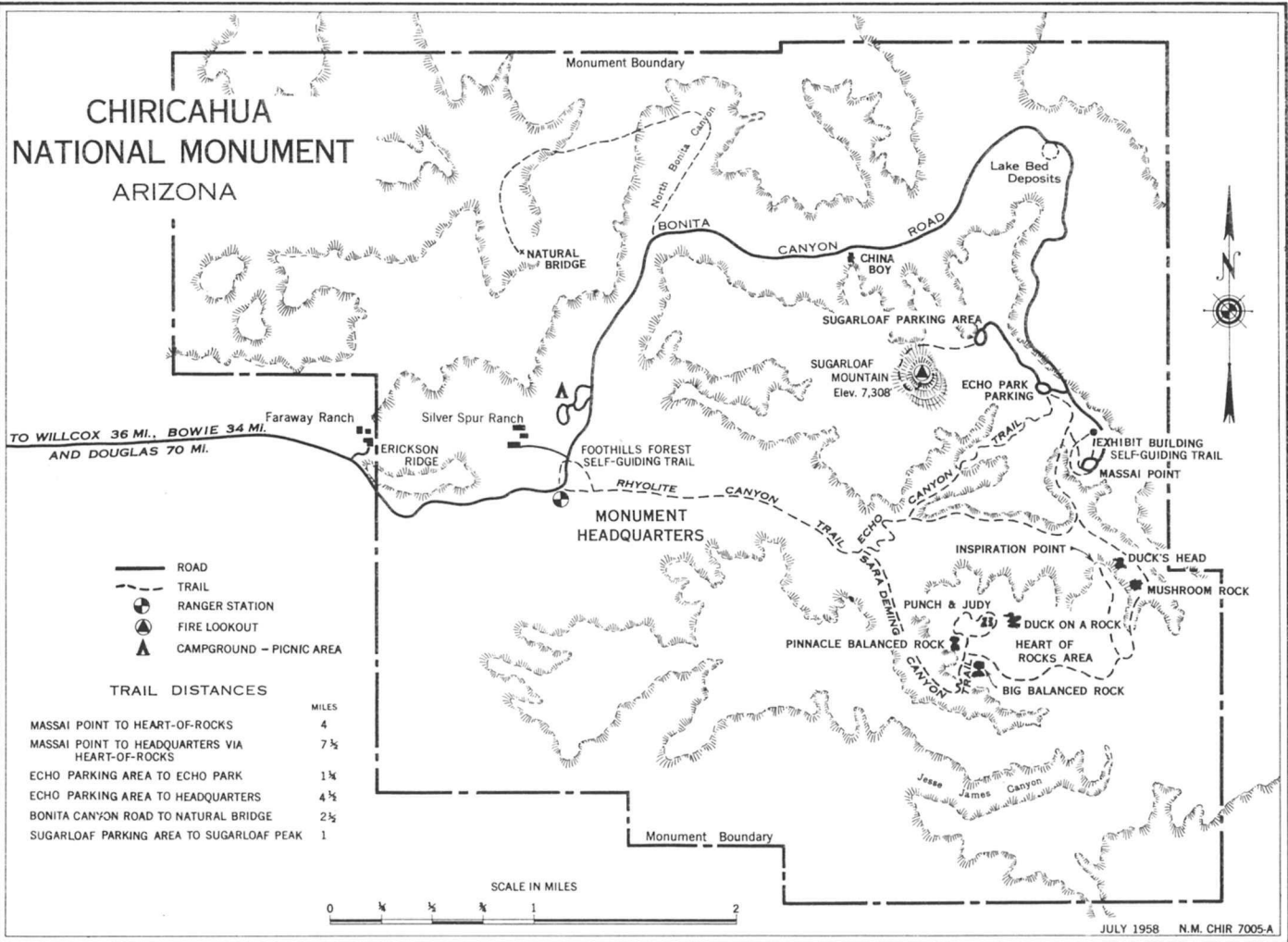
## **Acknowledgement**

One of the "mostest" places that I love on this earth is Chiricahua National Monument. While a staff naturalist on field assignment from the National Park Service's Southwest Regional Office I spent every possible hour of official and personal time in this intriguing and beautiful area. Many were the good folk, within and outside the Service, who gave of their knowledge, lore, and time to help me write this "get acquainted" booklet. Inevitably a list of credits would overlook deserving people.

I am particularly indebted to the following staff members at Chiricahua National Monument: Ray Ringenbach, former superintendent; Forrest Benson, former superintendent; Dewey Doramus, park naturalist; Robert Fultz, former park naturalist. In the Southwest Regional Office I was helped particularly by Natt N. Dodge, former regional naturalist; Albert H. Schroeder, archeologist; and the late H. V. Reeves, former regional publications officer.

The two photographs of the bobcat and coyote are used by courtesy of the U. S. Fish and Wildlife Service; part of the Arizona Road Map is used through courtesy of the Arizona State Highway Department; other text photographs used, and a map of the area, were used through courtesy of the National Park Service. Also, free access was had to the study collections and files at Chiricahua National Monument during a period of years.

# CHIRICAHUA NATIONAL MONUMENT ARIZONA



# Contents

	PAGE
AN ISLAND IN AN ARID GRASSLAND .....	1
THE ROCKS .....	2
EROSION, THE MASTER SCULPTOR .....	3
BIRTH OF THIS MOUNTAIN RANGE .....	5
THE RED BED .....	9
VOLCANIC HAILSTONES .....	10
THE CLIMATE .....	12
LIFE ZONES .....	16
PLANT LIFE .....	19
Between Entrance and Visitor Center .....	19
Visitor Center and upper Bonita Canyon .....	20
Plants of Higher Elevations .....	21
Chaparral .....	24
The Succulents .....	28
THE BIRDS .....	31
Ground Floor Birds .....	33
Second Floor Birds .....	35
Third Floor Birds .....	38
Fourth Floor .....	40
THE MAMMALS .....	41
Common .....	42
Occasional .....	47
Rare .....	50
Quite Rare .....	52
THE REPTILES .....	52
Poisonous Snakes .....	53
Harmless Snakes .....	55
Lizards .....	57
Turtles .....	60
AMPHIBIANS .....	60
HUMAN HISTORY .....	61
Early Man .....	61
The Spaniards Arrive .....	62
Arizona Territory .....	63
Cochise .....	63
Geronimo .....	65
Early White Settlers .....	67
Chiricahua National Monument .....	67
SUGGESTED READING .....	72
APPENDIX: LIST OF COMMON NAMES WITH SCIENTIFIC (Latin) Equivalents .....	74



*Arizona Sycamore in "sea of grass," mouth of Bonita Canyon*





*Entrance to Bonita Canyon*

*The Natural History Story of*  
**Chiricahua**  
*National Monument*

***An Island in an Arid Grassland***

**T**he approach to Chiricahua National Monument is through a vast, upland sea of grass in extreme southeastern Arizona. As you drive higher and higher you gradually penetrate the canyon-bouldered ramparts of a fantastically sculptured and heavily vegetated "island" mountain range, containing plant survivals of older and wetter climates.

Roads from Bowie, Willcox, Douglas, and Bisbee converge to a single paved ribbon across this seasonally green or golden grassland. Majestic Arizona sycamores are deployed across the broad flats of lower Bonita Canyon, soon joined by dense growth of pinyon and juniper trees.

Farther along, the canyon flanks rise abruptly above dense bottom vegetation to merge into chaparral and sculptured rock, with spots of thick coniferous forest sending up dark green steep-tips from favorable and shady locations.

Chiricahua National Monument lies in the Chiricahua Mountains, regarded by geographers as a part of the west's basin and range topography. The range is 40 miles long and from 4 to 20 miles wide, and is virtually surrounded by arid grasslands except at the extreme north end, where a low ridge forms a connecting link with the Dos Cabezas Mountains.

The eastern base of the Chiricahuas, in the San Simon Valley, has an elevation of about 4,500 feet, while the Sulphur Springs Valley, on the west, is about 600 feet higher. These mountains offer haven for a multitude of plants and animals of many species, ranging from about 3,500 to 9,795 feet above sea level at the top of Chiricahua Peak. Elevations within the 10,690-acre Chiricahua National Monument range from 5,160 feet in the northwest corner to 7,308 feet on Sugar Loaf Peak.

Runoff from winter snows and rains makes temporary streams and there are a few small permanent springs, mostly seeps. Dense vegetation grows in shaded canyon bottoms and on cool north slopes at higher elevations. Southern exposures, by contrast, get full heat of the summer sun, and plant forms there are more nearly typical of the lower desert. The vertical elevation of this range, and the fact that it has been separated by arid country from other mountain ranges over a long span of years, are responsible, in part, for the varied life forms and some variations in species.

Not only has the diversified mountain topography, with cool high peaks, deep and winding canyons, and heavily vegetated slopes, provided suitable surroundings for many types of wildlife, but the same incredibly complex terrain has harbored some of the fiercest and most resourceful human antagonists white men have ever faced. This sheltering wonderland in extreme southeastern Arizona, situated just south of the main mail and travel route leading westward to Tucson, was part of the homeland of the Chiricahua Apaches. Under leadership of Cochise, probably the greatest Indian war strategist in Southwestern history, the Chiricahua Apaches resisted white encroachment with fantastic vigor and ferocity. In the years from 1860 to 1872, their success against United States military forces almost brought westward expansion to a stop in southern Arizona.

### **The Rocks**

The formations which you see in Bonita Canyon after passing the visitor center are magnificent examples of spires,

columns, and pedestals supporting balanced rocks; however, the Heart-of-Rocks area, visible from road's end at Massai Point, carries such formations into an abundance and complexity which defies description.

The incredible variety and number of rock forms at first appears chaotic and haphazardly arranged. But after careful viewing at different angles you see that there really is a pattern. For one thing, the rocks appear roughly layered, and for another, these layers dip downward to the west. In addition, uplift of portions of the range has caused block faulting in several places. Movement along fault lines, which in some areas occur at wide angles to each other, developed stresses which produced vertical cracks in the rock. These cracks, in parallel sets criss-crossing one another, are called joint systems, and laid the pattern for later weathering.

Although not of sedimentary origin, the rock masses appear layered. This is because of variations in texture and composition of the rhyolitic lavas which compose them, as well as the compaction of lower level deposits by weight and heat of overburden.

### ***Erosion, The Master Sculptor***

From time to time in this wonderland of erosional forms you will see where a portion of what looks like the "hard outer shell" of rock has been breached by water, which then got inside and eroded out a pocket. This implies that the inside is softer. To a limited extent this is true. Actually, the phenomenon of "case hardening" has occurred, although not nearly so graphically as in some other regions where rocks are softer than those in the Chiricahuas. Here is what happens: during wet seasons, a small amount of moisture penetrates the softer parts of the formation (such as pumice) and works around harder particles. If the moisture remains in the rock for a fairly long period of time, some of the minerals partially dissolve. Then, when a dry spell occurs, the moisture, carrying these minerals in solution, returns to the surface. Here it evaporates, leaving the minerals behind to harden and make rock surfaces denser, smoother, and harder than before.

Exfoliation is another interesting weather action here. You notice considerable peeling and sloughing of the surface at the base of some cliffs or columns. Resembling gum-line erosion in human teeth, this powdering or sloughing off is a result of

dampness near ground level, and intermittent freezing and thawing in cold weather.

Erosion, the master sculptor of the Chiricahuas, also works wonders in other ways. One is sand-blasting. This is a minor form, in which wind-carried sand particles function like fine-grained sandpaper to wear away the rock.

Rainwater, more effective when the climate was wetter, still is an extremely potent erosion force here. It works into the countless little joint cracks and slowly makes flow channels out of them. Running water, even by itself, has dissolving power, and when carrying abrasive particles of sand and rock it is a force to be reckoned with.

As moisture penetrates tiny cracks, it enables primitive plant forms to invade them. Lichens, which color most of the rocks here with their glamorous greens, yellows, browns, and blends of the three colors, establish footholds in the cracks and promptly get to work at what seems their allotted task: turning rock into soil so that more advanced organisms can put down roots and grow.

Lichens are a symbiotic (living together of two dissimilar organisms) relationship between algae and fungi. One can effect photosynthesis, the magic welding of sun energy with food elements which enables growth of the two, while the other picks up the necessary raw food elements from the air and decomposing rock. Neither primitive plant can do the job of the other, nor can either live alone, hence this remarkably efficient partnership.

Lichen growth and winter freezing and thawing break down surface rock, widening and deepening cracks until more advanced plants gain footholds, in rocks and accumulating talus at their bases. Thus, eventually the earth's green mantle introduces the highly evolved and specialized grasses, herbs, shrubs, vines, and trees into such rock formations.

The erosion rate in the Chiricahuas has changed often in the span of geologic time covered by their formation and growth. During the several ice ages of the last million years or so, even though there is no evidence of glaciation here, the relative humidity was high. Resultant moisture not only intensified the rate of erosion, but brought plant growth that broke down rock and built soil more rapidly than is the case now.

The Chiricahua Mountains of today, with their tremendous upthrust above flat grasslands to high altitudes ("Chiricahua



*The Organ Pipes, showing cracks in joint systems which widened with weathering.*

is said to mean "the big mountain"), have a great influence on the climate of southeastern Arizona. This is because they induce considerable rainfall, thus providing much of the vital ground water needed for lower country livestock watering and agriculture.

### **Birth of This Mountain Range**

Foundations for these mountains were laid in the very remote past. At least a half billion years ago, in Cambrian or possibly even Pre-Cambrian times, a great sea covered this region, extending as far north as the present state of Utah. Over a base layer of granites and schists this sea, through repeated retreats and advances during a long period, laid down a thick series of marine sediments in the form of sandstones, limestones, and shales.

At the close of this period (end of the Paleozoic Era), the area was uplifted. The sedimentary layers were then given a good "sandpapering" by erosion for several million years (well into Middle Jurassic times). Then submergence came again, more millions of years later.

In fairly recent times, possibly only 50 million years ago,

came a period of mountain-making uplift, with attendant warping, folding, and faulting of the earth's crust. Since then, southeastern Arizona, as well as most of the North American Continent, has kept its "feet dry," with no important amount of sinking under a creeping ocean. Between 25 and 10 million years ago, (Miocene times), great volcanic activity occurred in many parts of the earth, and the first of three fairly distinct series of rocks was laid down over what is now Chiricahua National Monument. This layer was a blanket of volcanic ash or tuff, flow lava, breccia, and agglomerate.

By way of explanation, magma, or molten lava, may be hurled as blobs of any size or shape into the air during a volcanic eruption, or it may simply ooze from the vent and flow down over the landscape. Both types of action took place here, with the explosive action probably more prevalent, since flow lava is less prominent in the layer.

When the lava is hurled into the air, it cools on exposure to the atmosphere and settles to earth as anything from fine dust to pieces the size of a house. As these lava fragments fall, the heaviest land near the vent, with smaller and lighter pieces farther out. The accumulation around the crater opening forms a cone. As the cone builds up, fragments roll and slide down the steep slopes, with coarser, heavier pieces at the bottom and lighter ones at the top. Thus there occurs a crude sort of bedding or layering as successive eruptions make their deposits. This material gradually compacts by its own weight and that of overlying layers, infiltration, and deposit of cementing substances.

If the more or less porous rocks into which the bedding material is transformed are of coarser particles, they are called breccia. Rocks composed of fine dust and ashes are tuff. Large blocks in a chaotic mass intermingled with finer material — generally found at the mouth of a crater — are called agglomerate.

At Chiricahua, the basal layer of these volcanics is visible in an area extending from the vicinity of the Silver Spur ranch, opposite the visitor center, up Bonita Canyon to the top of the ash bed which is exposed along the roadside near the columnar rock called China Boy.

---

*Opposite Page: China Boy, in Bonita Canyon, looking west.*



The second volcanic layer, which followed a quiescent period, includes the massive rhyolite lavas, reaching a maximum thickness of 880 feet, from which the rock columns and other scenic features of the monument were formed. This formation begins near the base of China Boy and is visible from the road to a point near the Echo Canyon parking area.

There have been differences of opinion as to how this second layer was deposited. The more recent view contends that it was not a common lava flow or ash shower, but a "nuée ardente." This is the type of eruption made famous by Mont Pelee off the coast of South America in 1902. It is an eruption of white-hot sand and ash surrounded by, and charged with, incandescent gases held in suspension—"glowing clouds"—which do not rain down as from an ash shower but descend the slopes like a hot avalanche. So much solid is suspended in the cloud that it becomes too dense to surmount obstacles and behaves rather like a liquid.

*Sugar Loaf Peak, and Fire Lookout on Top.*





During descent of such an avalanche there develops a violently expanding and very dark cloud of gas and ash which tends to hide the descending material beneath it.

When cooled, debris left by the nuée ardente becomes very hard, forming "ignimbrite" or welded tuff. A number of different eruptions of this type have occurred, all with larger and heavier rock inclusions toward the basal, more thoroughly welded part, and with fragments of lighter weight, color, and greater porosity toward the top.

A third rhyolite layer consisting of more tuff, volcanic breccia, and flow lava ended the main period of vulcanism here. This layer is about 500 feet thick, extending from near Echo Canyon parking area to the top of Sugarloaf Peak, which you can easily recognize by the fire lookout station at the top.

You may ask "where are the craters which produced all this stuff?" Until early 1969 we couldn't tell you, and could only say that there were no volcanic vents within the Monument. However, geologists have now established that the source vent for the volcanic rock you see here is centered in the Turkey Creek area, ten miles due south of the Visitor Center.

### **The Red Bed**

On your drive up Bonita Canyon, as you go south and up the grade to Massai Point, you will notice the "red bed," in one place 60 to 70 feet thick, which consists of sediments of an ancient lake. This bed, underlying the thickest part of the three principal rhyolite layers, is in a zone of extensive faulting. Interestingly enough, it was originally a low area but seems to have been boosted so high by the block east of the fault zone that it is now higher than the rock mass to the west which once looked down on it. The sediments break down easily to form the bright red soil so characteristic of Bonita Park. No fossils have been found in the parts that have been exposed.

Why the red color? It varies with the texture, from moderate red through reddish tints of brown to orange. Apparently the red pigment is developed at the source of the sediments, at the expense of iron-bearing silicate or carbonate minerals. Iron, changed in the eroded material into ferric hydroxide, is present here now in the readily oxidizable form of magnetite.

The red beds are talkative in various ways about the climate which made them: (1) Edged fragments, rather than rounded

ones, indicate a short trip from source to lake bed. (2) Uniform composition of sediments indicates a short "haul" and, accordingly, little sorting by size. (3) The amount of oxidation needed to produce red coloring required a warm climate with more than 25 inches of precipitation a year. (4) Red weathering also required, at source, a well-drained topography with enough slope to keep the soil above the water table. (5) Even and regular bedding such as this is laid down under water.

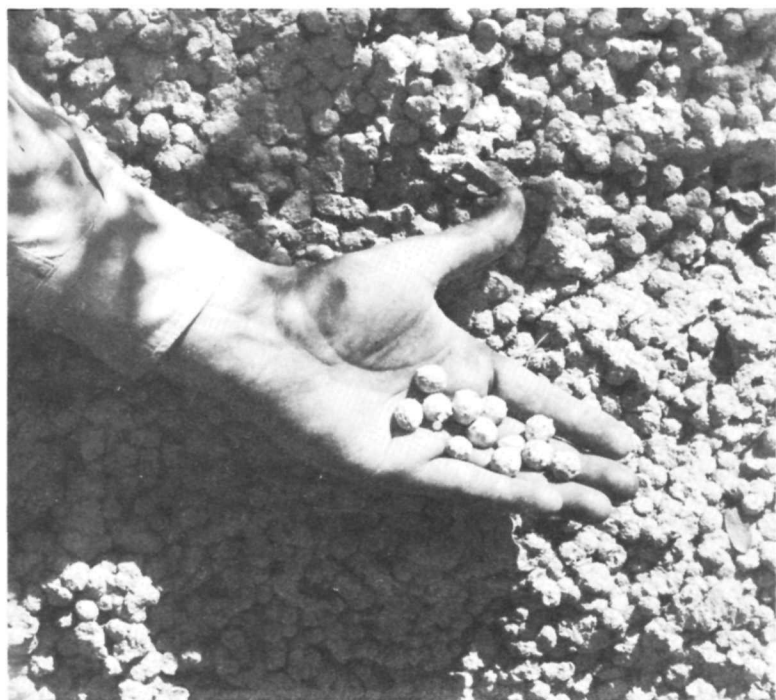
We have now briefed the principal forces which "set the stage" at Chiricahua National Monument. True, there were minor periods of vulcanism after the three principal ones which have been described, but nothing to radically change the picture. One other vitally important action, however, occurred near the end of the Miocene Period, about 10 million years ago. This was the great uplift of this series of rocks, dipping (tilting) them toward the west. Since then, erosion has been hard at work carving out the "wonderland of rocks."

### **Volcanic Hailstones**

Odd and interesting by-products of nature's feverish force here are the "volcanic hailstones," or "mud balls," which geologists call *accretionary lapilli*. These are light gray, marble-shaped stones averaging about a half-inch in diameter. The fall of mud balls during eruptions has often been observed, and most authorities consider them a result of aerial mixing of volcanic dust and moisture. Wet particles of pumice or ash under the influence of surface tension tend to pull together into nuclei, which are tossed about by turbulent air currents. A series of ascents and descents through layers containing varying amounts of moisture and ash results in the concentric rings sometimes visible when a mud ball is sliced across.

The best place to see the "volcanic hailstones" is at a point on the return loop of the trail from Echo Canyon parking area to Massai Point. Here they are gradually being eroded out of the softer base of poorly welded ashy tuff.

Chiricahua National Monument has at least one natural bridge. From Natural Bridge Trail Head on the Bonita Canyon road to the bridge, by foot or horseback, is  $2\frac{1}{2}$  miles. Unless the light is exactly right, it is difficult to see until you are right at it, although it spans 37 feet and is 26 feet high. The



*Volcanic hailstones, Upper Rhyolite Canyon Trail*

*The Natural Bridge, from West*



"bridge" is formed by a tapered rock wedged between the walls of a V-shaped canyon.

### **The Climate**

Chiricahua National Monument's weather records are not very old, but the 10-year period 1949 through 1958 gives some indication of patterned climate antics. Almost 19 inches of precipitation occurs annually although so peculiarly distributed through the year as to provide no permanent streams. More than half the annual rainfall comes in July and August, and the driest month, May, closes out a rather arid spring season.

Higher parts of the Chiricahua Mountains get more moisture, with possibly as much as 30 to 35 inches of rain and snow a year. All of southeastern Arizona is normally lush and wet during the summer peak season of violent electrical storms and heavy showers. Raging torrents frequently charge down Bonita and Rhyolite Creeks in July and August, usually dwindling to a trickle in a few hours, although in very wet seasons water sometimes runs for several weeks at a time. Mrs. Lillian Riggs, a pioneer resident of the region, says that when she was young Bonita Creek usually ran 8 months a year, from July to October and from February to May, and sometimes for the full twelve months. Moisture for summer thunderstorms originates in the Gulf of Mexico, making the long journey across the northern Mexico highlands to reach southeastern Arizona in late June. As summer progresses this deep current of moist air becomes more evident, reaching its peak during late July and most of August. During a 10 year span July averaged 14 days with thunderstorms, August 11 days. During the rest of the year the Chiricahuas get moisture from another ocean. From December through March an inch to an inch and a half of moisture comes in from the Pacific to fall as rain or snow. Nearly half the 15 inch annual snowfall occurs in January, with lesser amounts in November, December, and February.

Mean annual temperature at Chiricahua National Monument is about 58.1 degrees, very close to that of Salt Lake City and Constantinople. The warmest month is June, although the hottest single day in 10 years, 104 degrees, occurred on July 11, 1959. In the same period the coldest night was minus 1 degree on January 4, 1949, but zero temperatures seldom occur in the neighborhood of the visitor center and campground. As

in most arid and semiarid regions, the thermometer shows wide day to night fluctuation, often exceeding 40 degrees.

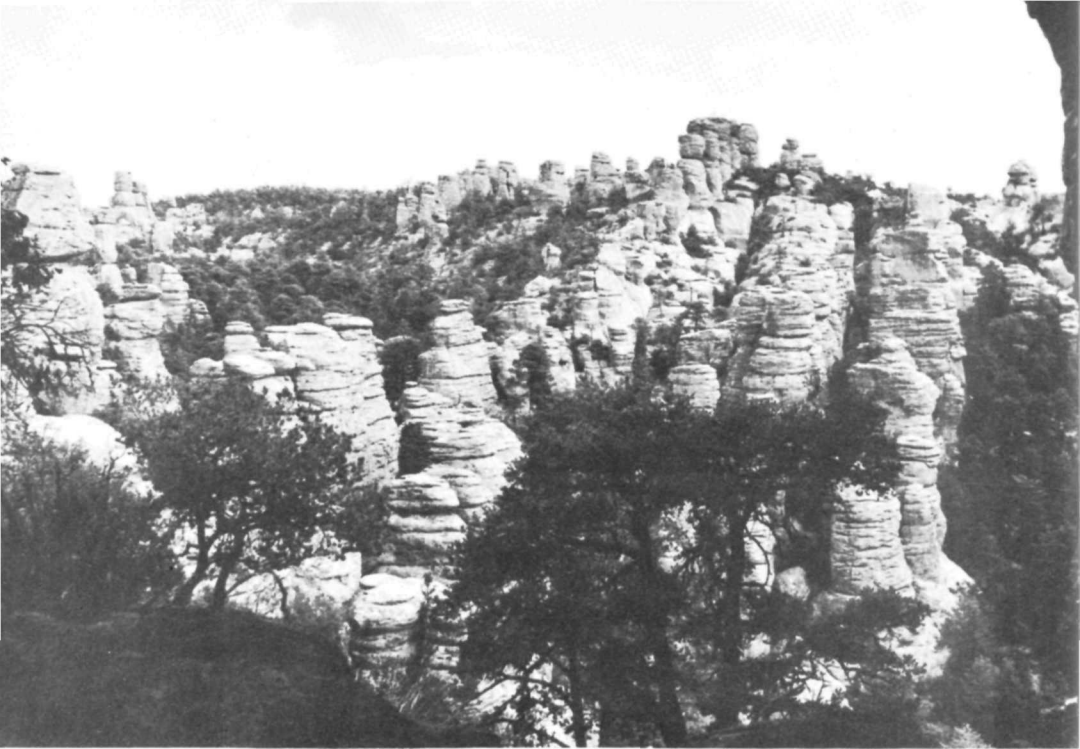
In this desert mountain country the thin, dry air transmits sunlight and heat very effectively and quickly. This, coupled with steep mountain and cliff slopes which act as reflectors, makes for strong convection currents, and quick, warm-weather build-up of thunderstorms, with associated strong, gusty winds, assorted rain, sleet, hail and just plain dust.

The Chiricahuas and the rest of the Southwest enjoyed a much wetter climate at the time of the last glacial maximum to the north, some 24,000 years ago. There was very little desert in eastern Arizona and New Mexico then. Where the Chiricahua foothills now support semiarid pinyon and juniper growth, along with short grass, then there was a land of pine forest with tall grass in the meadows, leading up from the prairie country. In effect, the climate now associated with the mountaintops prevailed then at an elevation at least 4,000 feet lower.

Later, as the general retreat of the ice sheet, hundreds of miles away, brought a related shift in volume of rain and snowfall, temperature here increased. It was broken by halts and reverses and even re-advances of distant glacier fronts, but the overall trend continued. By about 8,500 years ago, the temperature was approximately the same as now, and 1,000 years later so was the rainfall.

The Southwest continued to get hotter and drier. Deserts attained considerably greater extent than modern man has seen, occupying much of the land now regarded as only semiarid. Starting around 5,500 B. C., there began a 3,500-year drought, with peak temperatures which must have made any recent drought seem hardly worthy of the name! Only the highest parts of the Chiricahuas could have had true forest growth, with Bonita Canyon having mesquite-catclaw association, scattered grass clumps, and abundant cactus.

By contrast, the last 4,000 years have averaged moderately cool and moist. Glaciers formed on some of the high mountains of the United States again; sand dunes became anchored by vegetation; and arroyos filled up. There were several periods of severe drought during that time. Of these, three have been studied and are considered representative of far more general conditions than their names would indicate. There was the Fairbanks Drought, of about 500 B. C., in southeastern Arizona, an arroyo cutter; the Whitewater Drought (from study



*General view from Massai Point*

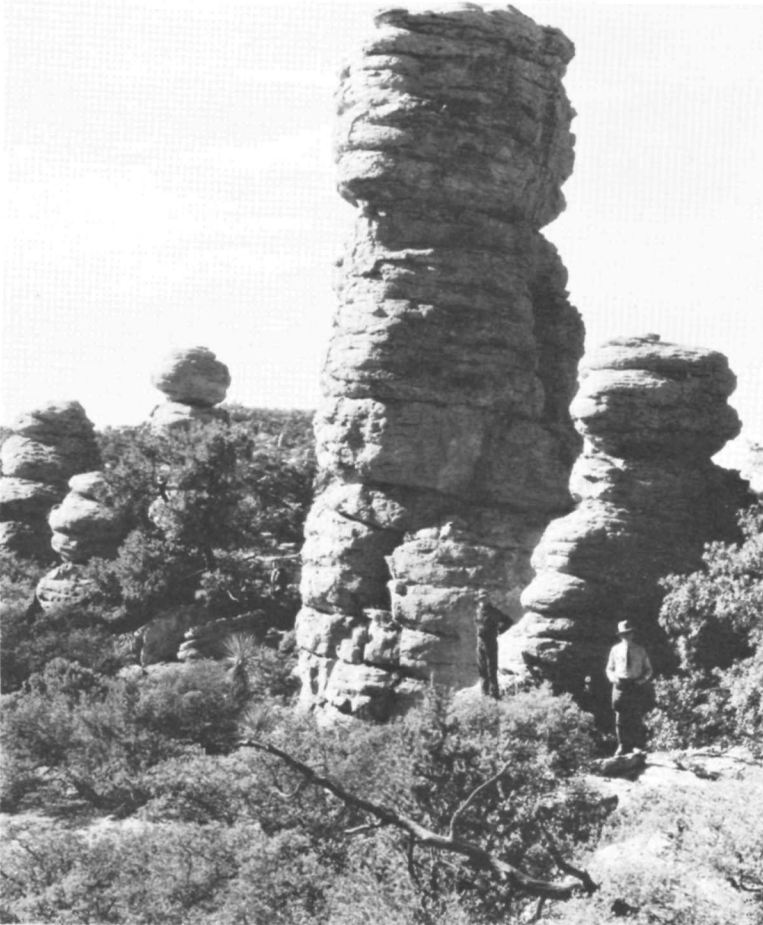
*View on Loop Trail from Echo Canyon*



location in the valley north of Douglas, Arizona) which lasted from about A. D. 320 to 329; and the great drought of A. D. 1276-1299, although it reflected general drought conditions for a much longer period, from 1215 to 1299.

The period of greatest erosion, when rock forms were being sculptured most rapidly, closed with the ending of the last major Ice Age, well over 20,000 years ago. The long, dry spell of 3,500 years would have seen rock cutting at its slowest, although arroyo cutting was accelerated because of insufficient vegetative ground cover to hold moisture and soil.

*Dip of rock layers to west is shown here*



There is some evidence that southeastern Arizona is now in the early years of another drought period, with gradually rising temperatures and decreasing rainfall. If this is true, we may expect another upward surge of the lower forest fringe, as drought-weakened trees die back. Many south-facing mountain slopes are now bristling with dead and partly dead junipers, oaks, and pinyons.

### **Life Zones**

Most living things have such special requirements for food, temperature, moisture, and shelter that they thrive only within definite climatic and environmental limits. Areas to which certain types of plants and animals are restricted because of their peculiar needs are called life zones. The Northern Hemisphere has been divided arbitrarily into seven such zones, beginning at the equator. If the earth were flat, the sorting of life forms would be a simple matter. But in mountainous areas, where conditions change rapidly as elevation increases, life zones must be recognized vertically as well as horizontally. An upward change in elevation of 1,000 feet is roughly equivalent to a change in latitude of 300 miles in a northerly direction.

At Chiricahua National Monument, with great altitudinal range and rough and broken rocky country, different life zones often have considerable overlap, with mixing of ordinarily separate biotic communities. A biotic community is the entire complex of life forms making up the elaborate set of inter-dependencies typical of an area. There may be one or several such communities within a single life zone.

Inside the monument boundaries are two distinct biotic communities and a portion of a third. They are the desert grassland community of the extreme upper edge of the Lower Sonoran Life Zone (some authorities regard this as the lower edge of the Upper Sonoran Life Zone); the chaparral community of the Upper Sonoran Life Zone, which goes through its full range in Bonita Canyon; and the forest community of the Transition Life Zone which reaches the highest northern exposures, as at Sugarloaf Peak.

Within any life zone where there is great variation in angle of exposure to the sun's rays, in texture or quality of soil, in exposed or protected spots, or in amount of moisture available to plants, you can look for micro-climates. These are climates





*Emory oak in upper limit, desert grassland.*

*Typical chaparral growth.*





within climates, and it is intriguing to hunt them out and see how they affect, or are affected by, the surrounding life pattern.

## Plant Life

### **Between the entrance and the Visitor Center**

Let's look at some typical plants you might notice in driving from the monument entrance to the Headquarters parking area. You have been going through canyon flats covered largely with big oaks, cypresses, and junipers. Now you also notice the sacahuista, with its extremely long grass-like leaves and the arthritic-looking whitish flowering stalks growing crookedly up from their centers. Here also is the gray, sage-colored rabbit-brush (containing rubber, though not in commercial percentages), a handsome, sizeable shrub which, in autumn, is a glorious riot of yellow flowers. Clumps of the red-barked and shrubby manzanita occur.

The one-seed juniper looks, at a little distance, like the first trees that young children draw, with dense and compact rounded form, and deep green color. It is not common in the monument, occurring mostly in lower Bonita Canyon and other lower and middle elevations. It is a small tree, 10 to 25 feet tall, with many branches and often without a central trunk. Unlike the alligator juniper, the only other species in the area, its bark is always fibrous and shreddy, and its berries occur singly, with one large seed in a juicy flesh. By contrast, alligator juniper has fruit with 3 or 4 seeds, and is mealy or resinous, not juicy. The only other tree here with which the one-seed juniper can be confused is Arizona cypress, which produces small cones instead of round berries.

One-seed junipers are also called *cherry-stone juniper*, *red-berry juniper*, *west Texas juniper*, *New Mexico cedar*, and *sabina*. Indians used the wood for fuel, ate the berries and used them to season meats, and chewed the gummy resin. When food was short they even chewed the inner bark. Many animals eat the fruit, including coyotes, foxes, raccoons, rock squirrels, chipmunks, and deer.

---

*Opposite Page: Ideal location for micro-climate.*



*Foothill Forest Trail, showing blend of canyon bottom forest with chaparral.*

### **Visitor Center and upper Bonita Canyon**

At the visitor center you are practically surrounded by trees. Here, in a little road planting island in front of the building, you see Arizona white oak, which sheds its leaves in May, and produces a bitter but edible acorn. Manzanita is again evident, and birchleaf buckthorn. The latter produces red berries, which are quite popular with the birds. In the immediate vicinity are Emory oaks, small Arizona white oaks, and silverleaf oaks. On extremely steep slopes and shaded canyon bottoms occurs net-leaf oak, seldom growing more than 7 feet high, but having exceptionally large leaves. Near the drinking fountain grows a southwestern black cherry. There are both large and small Arizona cypresses at the edge of the parking area, one large Apache pine, with very long needles, and an Arizona pine, the only yellow pine in the United States which normally has 5 needles instead of 2 or 3. Near the visitor center you also see the first Arizona madrone, a glamorous red-barked tree, related to the manzanitas. This tree grows up to 40 feet tall and 2 feet or more in diameter. The smaller branches are red, the larger ones gray, and the main trunk gray-checked.

The above plants not only typify the Upper Sonoran Life Zone's chaparral community, but also the Transition Zone's forest community. This amicable blending, especially on the more shady side of the canyon, is not surprising, because there is much plant mixture along any stream, and because moisture and temperature are sufficiently congenial in the canyon parts of this Upper Sonoran Zone to create favorable micro-climates for pines, cypress, etc. One reason for this is the cold air streams which rush down into the canyons at night.

Arizona sycamore is common here only on lower Bonita Creek, with scattered occurrence higher up the stream channel and in other drainage courses. On lower canyon flats the dark Emory oak, which produces a better tasting acorn than most, is the dominant tree, with Arizona white oak beginning to enter. Farther up Bonita Creek the Emory thins out and Arizona white becomes dominant, with the silverleaf entering. Finally, where the canyons narrow, Emory drops out, and silverleaf oak becomes more conspicuous, frequently making up, in shrub form, the entire ground cover on steep slopes. Silverleaf oak reaches tree size only in the bottoms.

### **Plants of higher elevations**

As you leave the lower portions of the monument you find a subspecies of ponderosa, called Arizona pine, which grows from 6,300 feet elevation on up, but drops down in the canyon bottoms to fraternize with silverleaf oak, Arizona cypress, and Douglas-fir. It grows to about 125 feet high, is also scattered in occurrence, and usually has chaparral undergrowth.

The southwestern black cherry also occurs only in cooler spots with a northern exposure. The young trees are handsome, with smooth, reddish-brown bark and big shiny leaves, completely saw-toothed all around. The cherries are at first a bright shiny red, ripening to almost black. If anyone but an Indian can keep from making a face when eating them, we'd like to see him! Bears eat them, too. We suggest eating something else.

In extreme upper Bonita Canyon, as you reach and pass the red bed, you enter a good stand of ponderosa pine. This long, clean, well-shaped tree, up to 125 feet high, favors elevations here between 5,500 and 6,000 feet. It is one of the pines with long needles occurring in threes. It also has a shallow root



*Douglas-fir tree*



*Douglas-fir cone and twig tip*

system, with mainly surface roots, which explains the high percentage of "blow-downs" when twisters hit ponderosa in more open country, and high percent of deaths during severe droughts.

Apache pine, on the other hand, has mostly taproots and only small surface roots. Unusually long needles make the young tree resemble longleaf pines of the Southeastern states, although the adult resembles ponderosa. Here in the Chiricahuas, Apache pine occurs at mostly middle elevations from 5,500 to 6,600 feet, and not in pure stands, but scattered. There is usually an understory of oaks.

The Chihuahua pine, more at home in Mexico, is found at all elevations here. More commonly it is in canyon bottoms and on north facing slopes. At higher elevations it occurs with pinon and Arizona pine. Chihuahua pine grows 35 to 60 feet high, with a trunk diameter of about 24 inches. It has thin foliage, dull gray or bluish-green in color, looking lighter and less shiny than that of other pines. This is the only pine in the West requiring 3 years for the cones to mature. All others mature the second year. After seeds have been cast, old cones

hang on the tree for another couple of years.

Douglas-fir, (not a true fir at all), grows quite tall, to 125 feet, and has a handsome, tapering crown. In Oregon and Washington, it may reach 300 feet in height, but Chiricahua is near the southern limit of its range. It appears at higher levels, on steep, shady slopes, and in the canyons with Arizona cypress, Arizona pine, and Mexican pinyon. If you examine one of the rather small cones, you will find a unique feature distinguishing it from other conifers. This is a three-pronged bract protruding between the cone scales, sometimes called "Neptune's trident."

The dominant tree here is the little Mexican pinyon, which grows to about 25 feet, and occurs everywhere in higher parts of the area. Usually twisted and distorted in form, it is seldom in a pure stand, and ordinarily has a chaparral understory. The needles, three to a bundle, are much finer, longer, and more flexible than those of other Southwestern pinyons. This tree is quite slow in growth, and may reach an age of 250 to 350 years. The nuts have a delicious flavor, and have long been important food items to Indians, and to birds and rodents. Cones of pinyons usually fall from the tree not later than the winter after the seeds have scattered.

Arizona cypress attains magnificent size and beauty in this area. Some Echo Canyon specimens are up to 100 feet tall, and one has a diameter of 34 inches at a point 5 feet above the ground. The young trees have smooth cherry-red bark which turns quite dark with age and becomes either stringy or checked. Near the Echo Canyon parking area is one tree with the unusual feature of two trunks, each entirely different from the other. One trunk has stringy bark, while the other has the typical rectangular bark blocks so imitative of alligator juniper. The exceptionally large, berrylike cypress cones distinguish smaller trees from the small-fruited junipers.

Another odd cypress specimen occurs on the high and rocky ridge between Heart-of-Rocks and Massai Point. This one, a mature tree, is a dwarf, only 9 feet tall, and has grown more laterally than upward. The location obviously does not offer the most perfect growing conditions for Arizona cypress.

The picturesque alligator juniper, often associated here with pinyon pine and white and black oaks, is the largest juniper species occurring in Arizona. It sometimes reaches a trunk diameter of 7 feet and a height of 65 feet, although ordinary



*Arizona Cypress cones and twig tips.*

← *Arizona Cypress*  
*in*  
*Bonita Canyon*

height is from 30 to 50 feet. The bark consistently appears in square checkered plates.

The tree is slow growing and lives 500 to 800 years under good conditions. Ideal conditions offer greater longevity. A boring from one near Portal, about 25 miles southeast of the monument, revealed the age at 1,100 years, and a dead one near there would probably have been 1,400 years old. The plant is extremely hardy and drought resistant, and when broken down or cut, sprouts vigorously anew from the stump. Indians of Texas, New Mexico, and Arizona used to eat the fruits, and stored them for winter; the fruits also form a very important part of the diet for most big game animals.

### **Chaparral**

Only casual reference has been made thus far to chaparral, which is sometimes understory to the trees and sometimes the

---

*Next Page: Alligator juniper*





principal cover vegetation. A good dictionary definition is "any dense thicket of stiff or thorny shrubs or dwarf trees." Sometimes chaparral represents climax vegetation in an area of somewhat severe climate. In other words, dwarfed trees and tough and thorny shrubs would be the climax, or mature, community in a desert region.

In other cases, chaparral is simply one stage in development toward a climax vegetation of different character, in this case a coniferous forest. If you drive to the small parking area just below Sugarloaf Peak, and walk up the trail to its lookout, you will see a number of charred and blackened tree stumps. These are relics of a fire or fires which burned over a large part of the monument area sometime between 1865 and 1890. The present thin and scattered stands of pine trees consist partly of younger growth and partly of climax forest remnants which occupied more favorable portions of the slopes here before the fire. There were larger trees here than now, and many more of them.

So the dense growth of tough shrubs and runty trees here today is, in part, a stage in re-creation of the forest; also, in part, the chaparral is a climax growth, in spots where forest could not grow.

One well adapted member of such growth is the Toumey oak. It has unusually small, yellowish-green leaves, shiny on the upper surface. Ordinarily it becomes a shrub 3 to 6 feet high, or a small tree under 30 feet tall. With pointleaf manzanita, this oak makes up most of the chaparral growth in places favorable for pinyon, covering well over half the monument.

The manzanita part of this team is a member of the heath family. Its tough evergreen leaves by twisting their stalks can stand vertically to resist excess evaporation in drought periods. The wood is exceptionally hard, covered with smooth, dark red bark, like the smaller branches of its relative, the madrone. The fruit is berrylike, the pulp containing several nutlets. Several species of birds, and bears, chipmunks and other animals eat them, and tasty jelly can be made from unripe fruit. Indians also made a pleasant acid drink from the berries.

Sometimes the essentially manzanita-oak-scrub chaparral is so thick as to be literally impenetrable. Manzanita spreads and reseeds rapidly on overgrazed or burned areas. After forest fires it can reproduce from root sprouts, and is one of the first plants to resume growth. It occurs here both in pure stands,



*Manzanita growth*

mixed with scrub oak, and with scrub oak and hairy cercocarpus. The latter, better known in many localities as mountainmahogany, is quite intimate here with pointleaf manzanita, juniper, pinyon, and grass, as well as with scrubby forms of silverleaf and Arizona white oak. It grows to small tree size here, as high as 15 feet in ideal situations. The seeds are long-tailed, spiral, and feathery, so that when carried by the wind they have a tendency to whirl. Presumably they get "screwed" partly into the ground when the spiral tail is moistened by rain or snow. This plant is a favorite browse for deer.

Another fairly common member of the chaparral community is skunkbush, a non-poisonous relative of poison ivy. Often called "limonita" (Spanish for little lemon), its red, hairy berries are tasty and make a flavorsome soft drink. The three-lobed leaves make beautiful early autumn colors, being among the first to turn. The name is from the faintly unpleasant leaf odors.

Another member of the chaparral community, not common but quite outstanding, is the desert ceanothus, a many-branched shrub about 5 feet high. It blooms, according to altitude and temperature, during March, April, or May. Sometimes called wild lilac, its abundant tiny whitish, bluish, or pinkish flowers

appear for only a few days. A treat is in store for those lucky enough to catch the ceanothus in bloom, for the fragrance is so rich and heavy it is almost intoxicating. This is another important forage plant for deer.

### **The succulents**

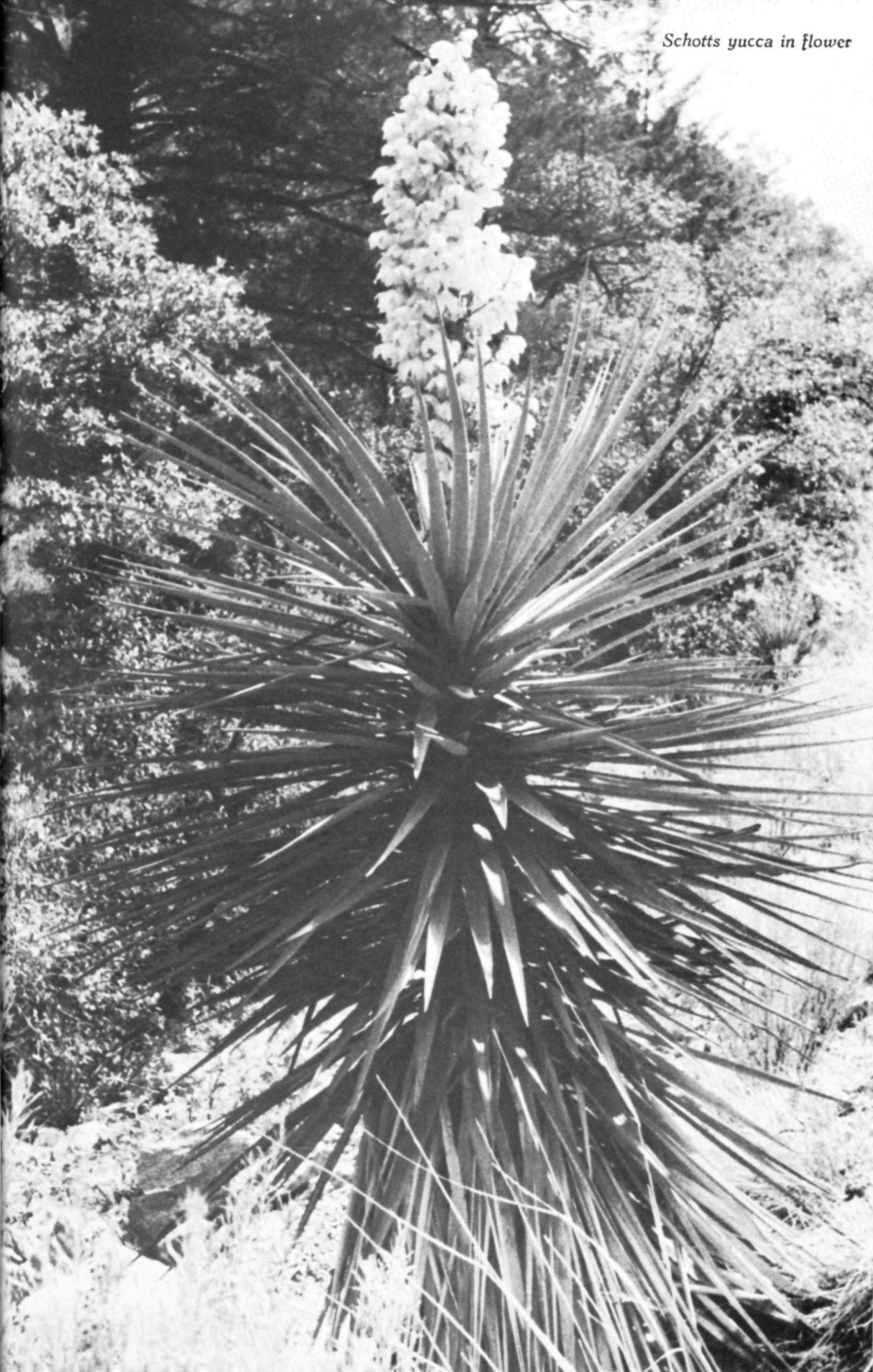
Almost everywhere in the monument you will see some of the plant kingdom's more showy specialists at cooperating with the inevitable. They are the succulents, which can store lifesaving moisture against a dry spell. You are familiar with pricklypear and cholla cactus, neither of which is sufficiently abundant here to warrant more than passing mention. Agaves and yuccas, both of which store moisture in their tissues, are quite abundant in the canyons and on canyon slopes. Both have sharp spines at their leaf tips, and the yuccas are smooth or have a white "hair" along the leaf edge. By contrast, the agaves here not only have the terminal leaf spine, but sharp curving hooks along leaf edges. Both the agave and the yucca were of economic importance to the Indians. Hearts of agave plants, roasted, were used for food. Needles and thread were made from the hard, sharp spines and tough fibers. Fermented juices from leaf bases and hearts made intoxicants.

The buds, flowers, and young flower stalks of the yucca were eaten raw or boiled, and leaf fibers furnished material for rope, mats, sandals, baskets, and cloth. When properly prepared the roots provided a good substitute for soap.

Although yuccas have the ability to reproduce vegetatively (without sexual or seed reproduction), it is an interesting and odd fact that for seeds to pollinate they need the help of a particular species of small moth. It carries in pollen when it enters the ovary of the yucca flower in order to lay its eggs there. As the larvae hatch they find themselves surrounded by food in the form of seeds, all of which developed because of the fertilizing pollen the moth unthinkingly brought in. The larvae eat a few seeds and the rest are left in good condition.

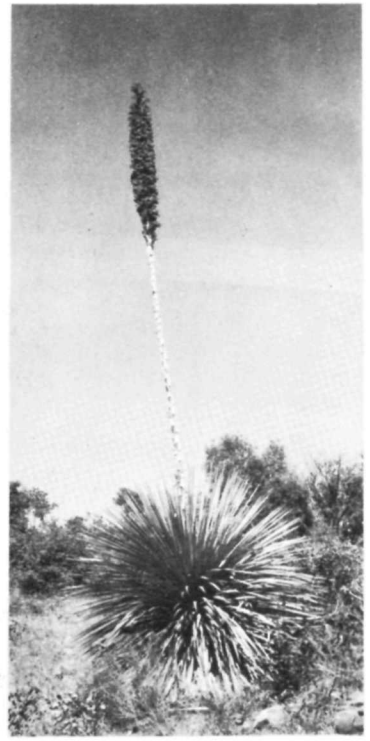
Both plants send up a central flowering stalk, but with the agave it must always be "an only child," for the plant blooms only once in its lifetime, then dies. Tradition has it that the agave, or "century plant," takes 100 years to bloom. This is not true. Agaves of the United States and Mexico, including the Palmer agave and Parry agave which grow here, have life

*Schott's yucca in flower*





*Palmer Agave in bloom*



*Sotol in fruit*

spans of anywhere from 11 to 29 years, varying with the species and to some extent with the environment.

The Schotts yucca, on the other hand, goes blithely on reproducing its kind here for a number of years, with a new flower stalk for each year of bloom. The same is true for the related sacahuista and the Wheeler sotol, both of which occur here.

Sacahuista looks for all the world like a huge clump of grass with rather broad and exceptionally long leaves very badly in need of a barber's attention, with leaf blades going determinedly in all directions at once from the central clump. When this homely, but exceptionally tough plant blooms, it shoots up a slender stalk which is almost invariably all bent and crooked. Tender flower sprouts were eaten by the Chiricahua Apaches, both in the raw and cooked condition.

By contrast, the sotol is singularly graceful. It also sends its ribbon-thin leaves in all directions, but they are shorter than

those of sacahuista, and stand out reasonably erect and uniform in length. Each leaf has spines along both edges, set as closely as saw teeth and capable of tearing human flesh to ribbons, but it lacks a terminal spine. The flower stalk is usually almost straight, and thickens to a graceful, long, lance-head shape when flowers and fruit come at the upper end.

## The Birds

**M**ore than 250 species and subspecies of birds have been recorded in the Chiricahua Mountains. They don't all occur in the monument, of course, but about 100 are listed, a number which will greatly increase as more observations are made.

Because it has been found convenient to think of many birds of Chiricahua with relation to "floor levels" preferred by them, the following outline will clue you to the horizontal habitat preferences of some birds most commonly seen here in spring and summer:

*Ground Floor* (Ground level through chaparral and middle of small trees):

Ash-throated flycatcher  
Black-chinned hummingbird  
Mexican junco  
Poor-will  
Scaled quail  
Harlequin quail  
Gambel's quail  
Painted redstart  
Red-shafted flicker  
Robin  
Roadrunner  
Rufous-sided towhee  
Turkey  
Whip-poor-will

*Second Floor* (Middle of large trees and top of small trees):

Black-headed grosbeak  
Mexican jay  
Cassin's kingbird  
White-breasted nuthatch



*Flicker (female)*

Bridled titmouse  
Solitary vireo  
Western tanager  
Black-throated gray warbler  
Scott's oriole  
Say's phoebe  
Western wood pewee  
Wilson's warbler  
Arizona woodpecker  
Hairy woodpecker

*Third Floor* (High trees and tree tops):

Steller's jay  
Pigmy nuthatch  
Painted redstart  
Robin  
Western tanager  
Hairy woodpecker



*Fourth Floor* (Cliff tops and free air above the cliffs):

Golden eagle  
Raven  
Violet-green swallow  
White-throated swift  
Turkey vulture

Even the most casual glance at the "floor level" listing reveals that such birds as the western wood pewee, robin, and painted redbird occur in more than one horizontal level. Others, like the canyon wren, are not listed, because they don't limit vertical activity enough to be "classifiable" for even any two levels. Despite exceptions, it is still practicable to assign more specialized birds to definite forest or cliff activity levels.

It would be a rare day indeed, for instance, to find a golden eagle on the forest floor, or a Gambel's quail perched on a cliff or ponderosa pine top. The cock quail may perch atop a bush or low tree to survey the land and report possible hazards to his lady love, or family group. He will sometimes do this even when he is a crusty old bachelor or grass-widower, probably out of loneliness, but you are not likely to see him high off the ground.

**Ground floor birds**

The Gambel's quail is a handsome bird with forward-curving black crest, dainty black mask, and black belly spot. His bride

*Gambel's quail (male)*



is dull in color, but also has a crest. He is very gallant to her, and takes turns sitting on the eggs when she needs to stretch. You will find them in the grass and chaparral thickets at lower elevations.

With luck you may see, in similar terrain, an occasional scaled quail, so-called because of the scaly pattern markings on the breast. This bird has a bushy, erect, white crest. The harlequin quail are rarely seen, but definitely are part of the pattern here. They prefer the brushy slopes in arid mountain country. They have no crest, but are distinguished by a somewhat circularly striped face. They used to be called fool's quail because they lacked caution and would allow a person to come close enough to kill them with stones. As a result, they were thought not far from extinction, until fairly recently.

You occasionally find the roadrunner, or "chaparral cock," up to 6,000 feet or higher. This gawky ground-cuckoo looks so clumsy in repose that he is sometimes called the clown of the desert. Running, he resembles nothing more than a perfectly straight, long, black, horizontal line with a slight bulge in the middle, although he is far from black, except in spots. Roadrunners will eat almost anything, even if it is too big to swallow in one gulp. Among their foods are snakes, lizards, mice, scorpions, centipedes, and tarantulas. You may often see one running around with part of a snake or lizard dangling from its mouth, being swallowed on the installment plan!

If you hear a noisy rummaging in dead leaves under bushes,

#### *Roadrunner*



chances are that a rufous-sided towhee is at work. This colorful bird, with black or brown head, white belly, rusty-red sides, and black wings and tail, both with white markings, is much like the barnyard chicken in his scratching for insects and seeds.

A real combination of noise and color is the red-shafted flicker, a large, brownish-backed woodpecker, with conspicuous coral underwing color when in flight. Male and female alike have a red "mustache." This bird is found at any level, although more commonly on or near ground level. They are useful birds with a sweet tooth for ants. Their diet also includes grasshoppers, crickets, other insects, acorns, seeds and wild berries.

A common winter visitor is the Oregon junco, a sparrow-like bird with black head and vest, rusty sides and back, white belly and white tail margins. These high-country birds drift down during snow season to sheltered and warmer valleys, where they feed on seeds and berries.

The painted redstart is a summer resident of the mountains, and you find him anywhere from ground level to the tops of the evergreen oaks, pines, and firs. His color is black, save for rich red on the breast and large white patches in wings and tail.

### **Second floor birds**

The screech owl, heard in Bonita Canyon at night from spring through autumn, is the only small owl common to Chiricahua. Unlike other small western owls, he has conspicuous ear tufts. The great horned owl, another common resident, is the only large one with ear tufts. Campers often hear his deep, resonant "hoo, hoo oo, hoo, hoo."

A drumming roll at crack of dawn, sounding a little like a jackhammer, is almost a sure sign that a red-shafted flicker is at work on the hollow top of a dead tree with his drill-like beak. Were it not that such antics are performed by both sexes, it might be assumed the racket was a territorial warning. Territory is the claimed range of a pair of birds, and its defense is nature's way of seeing that the couple, and the young it will bring forth, will have sufficient area from which to obtain the special food needs of the entire family. A male bird will often sing loudly, or make other noises, or use force, in an effort to keep intruders away from his "homestead."

Three species of woodpeckers are fairly common year-round residents here. The acorn woodpecker has a black back, white rump, and black, white, and red head, with the red on top. The Arizona woodpecker is rather small, and is the only brown-backed woodpecker. The male has a red patch on the nape of his neck. The third, the hairy woodpecker, is the only white-backed woodpecker occurring in the monument. The male of this species has a small area of red on the top of the head.

Woodpeckers are shy birds, and will hurry on clinging feet and stiff-feathered tail tip around to the opposite side of a tree at approach of a human. They are also secretive when nesting and rearing their young in the homes which they have drilled in dead trees. The drilling operation is performed with a sharp beak powered by a slender but well-muscled neck. A taste for bark and wood-boring insects is also satisfied by drilling into the tree to reach the parasites. In their quest for food woodpeckers do much the same job of insect control in the trees that flycatchers do on flying insects.

A common summer visitor is the black-headed grosbeak, seen from middle to upper occupation levels in the trees. The male has a handsome black head, rusty breast, and strong black and white wing markings. The female is mostly brown, with a striped head. The grosbeak has a masterfully varied and exquisitely turned out song. Florence Merriam Bailey, author of *Birds of New Mexico*, says of his song "...it is smooth and rounded, and its highest notes are dwelt on and trolled over with rare tenderness, repeated not as a thrasher's notes are repeated, but with the enjoyment of an artist consciously perfecting his work." Mr. Grosbeak, like the quail, is a good "family man," sitting on the nest in his mate's absences.

The coppery-tailed trogon is a tropical bird which has been gradually moving its northern range into the higher mountains of southern Arizona. It is still rare in the Chiricahua Mountains, but if you should have the luck to see one during its brief summer residence it will be an experience long remembered, for they are almost unbelievably beautiful. A little larger than a kingbird, with a long copper-colored tail, the trogon has a bright roseate breast, and a white band across the chest below a dark head. From a distance, the head and upper body appear blackish, but are really a dark, glossy green. The thick bill is a dull yellow. The female is less brilliant in color than the male.

Troglons like the larger canyons where they frequent the big-leaved sycamores on the floor as well as the oak woodland of the slopes above. They have a turkey-like call note, much of their diet consists of insects, taken in standard flycatcher manner (midair). At rest they resemble parrots or macaws.

If there is one particular category of birds that is dominant in southeastern Arizona, it is the tyrant flycatchers. Exclusively a New World family, flycatchers number many hundreds of forms, mostly centering in tropical lands, but amply represented in the Chiricahua Mountains. Their dominance is due largely to aggressiveness, ferocity, and adroitness at aerial maneuvering, and to the abundance of insects in these parts. Importance of flycatchers in helping maintain a favorable ecological balance in their range can scarcely be overestimated, even though only two species, the ash-throated flycatcher and the Say's phoebe, reside in the monument the year around. Both are reasonably quiet and well-mannered. The phoebe, when not snapping up bugs in midair, can be located by its plaintive *pee-you, pee-you, pee-you*.

The amateur, and sometimes the professional ornithologist, has difficulty distinguishing between some flycatcher species. Prime examples are the two kingbirds which may be observed at Chiricahua.

The western kingbird, more a bird of the open country, is occasionally seen in the monument. A little smaller than a robin, with pale gray head and back, yellow underside, and black tail bordered on each side by white, this bird seems to fear nothing that flies, and will even engage in aerial combat with others of his kind. The battles are sometimes so intense that participants become exhausted and settle to the ground to finish them. Hawks, vultures, and even golden eagles may be attacked by this little tyrant with such vigor that they will fly away, sometimes with the angry attacker riding piggy-back and pulling feathers from the back of his unwilling carrier.

The Cassin's kingbird looks much like the western, but is darker and lacks the white tail margins. Both species often occupy the same habitat in upper and middle levels of the canyon forests. Although Cassin's is an objectionably noisy braggart and scrapper, both species are great benefactors of man in their fondness for insects.

Some other flycatchers observed in the monument are the Coues', olivaceous, olive-sided, and at least two species of

empidonax (from two Greek words meaning *mosquito* and *king*).

You will often see the blue flash and hear the noisy conversational or warning chatter of Mexican jays above the "ground floor" of chaparral and low trees and into middle levels of forest growth. These are the only blue jays without crests expected here. They resemble the scrub jay of California.

Mexican jays (some call them "Arizona jays") are as watchful as a "chickaree" or a bad conscience—their sharp eyes seem to miss nothing. A visitor recalls an August day when he was drawn to a small natural clearing in a stand of pinyon and juniper by the ribald and accusing chatter of a flock of jays. In the center of the area was a magnificent specimen of the northern black-tailed rattlesnake. Jays were in low tree branches on all sides, telling him and the world that they knew of his intrusion and resented it.

### **Third floor birds**

The Steller's jay, a large and handsome bird with a showy crest, is our other common jay. It ranges from the Rocky Mountains to the Pacific, and its usual habitat is the true coniferous forest.

*Steller's jay*



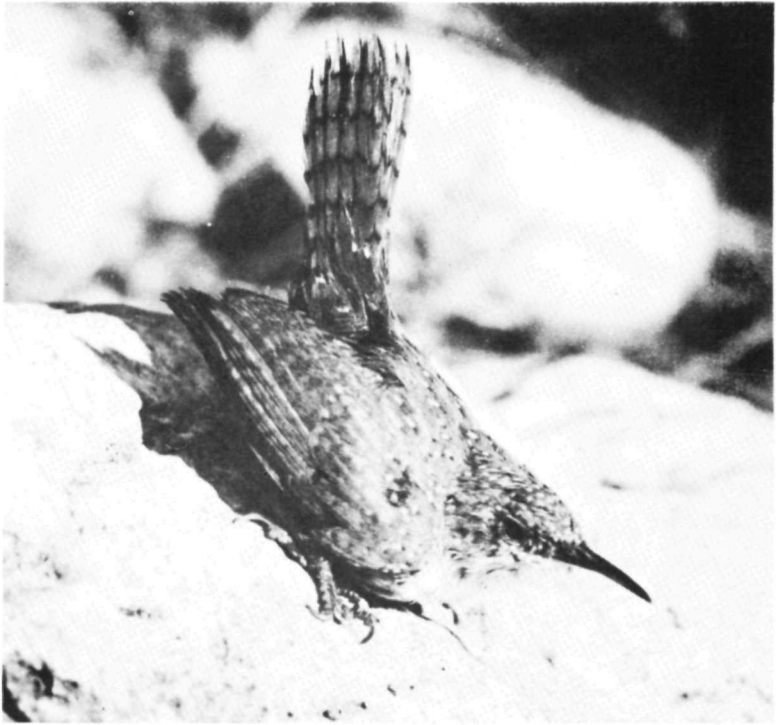
If a popularity count were made among birds, the Mexican and Steller's jays would probably rate below the bottom of the list, because these raucous thieves plunder the nests of other birds to gobble eggs and young. Yet, they play an important role in nature. To help control fecundity of living things, to force alertness and survival of only the fittest in smaller bird species, to devour weak and diseased small creatures, all are important to healthy wildlife balance. And in a moral sense, perhaps their role as the Paul Reveres of the forest in some measure makes up for the robbery and murder they commit.

A common little forest bird, hard to follow as he flits about in the upper levels, is the nuthatch. This chubby tree climber is represented here by three species, the white-breasted, red-breasted, and pygmy. Unlike the woodpecker, the nuthatch does not use the tip of its short, stubby tail as a climbing aid. It is the only tree climbing bird which habitually goes down a tree trunk headfirst, and is as likely to be found clinging to a branch head down as head up.

The nuthatch drills holes, woodpecker fashion, in the soft wood of dead trees, and builds its nest inside. The red-breasted nuthatch, a transient, is rare here, and has been seen only in Douglas-fir growth at higher elevations. The pygmy, on the other hand, is a resident, and is usually found in pine trees, where it gets part of its food from insects, larvae, and insect eggs in the bark.

Probably no Chiricahua bird is more popular than the robin, with its plump, brick-red breast, gray back, and darkish head and tail. This friendly bird is seen nearly everywhere, spending lots of time on the ground in pursuit of worms, ants, caterpillars, crickets, and grasshoppers, and showing no aversion to hackberries, mistletoe berries, and other small fruits. Nests, lined with damp earth when available, are built in crotches of tree limbs, and three or four eggs are laid. While the female is on the nest, in May, the devoted husband does a good deal of singing, probably in part as territorial defense and in part to please her. He is not as melodious as the eastern robin, and his song is composed more of very short phrases, but the listener has no difficulty associating him with his relatives, the thrushes.

One of the most charming of North American birds, the canyon wren, is at home in several levels. This little reddish-brown musician with the dark red-brown belly and white breast and



*Canyon wren*

throat is far more likely to be heard than seen as he practices whistling down the notes of the musical scale. Perched on some rock or tiny ledge of the sheer cliffs as he sings, he symbolizes the canyon country for which he is named.

#### **Fourth floor birds**

Among the birds that you will most often see in flight at and above cliff-top levels is the white-throated swift, a summer visitor which nests high in the cliffs. This is one of the fastest flying of all living creatures. It is also talkative, making a high pitched and very rapid chittering sound, which you can hear if you are close. Its long, pointed wings curve to form a crescent. The underbody is white and black. The violet-green swallow, seen in the same habitat, has white underparts and a less pronounced wing form. Seen from above while in flight this bird has a distinctive iridescent violet-green topside.



Another high flyer is the common raven, which looks as black as ink and has a glossy sheen. A resident in the monument, the raven is almost as large as the turkey vulture, a summer visitor. Both are carrion eaters, but there the resemblance ends. The raven caws noisily as he flies, and flaps his wings vigorously; the vulture is silent, and is probably the most effortless glider of all birds. If he flaps his wings at all, the movement is barely perceptible. Ravens are known to take young birds and eggs from nests. In lower grasslands they are almost as destructive in this respect as the jays in high country. Thus they are an active part of the natural system of checks and balances.

Most elite of resident birds at Chiricahua is the golden eagle. He may be difficult to identify when in flight, for he soars much like the vulture, and at such heights that size comparisons (the eagle is considerably larger) are not always possible. At relative heights though, and not considering size, there are several distinctive features. The adult golden eagle is evenly black, usually with some white at the base of the tail. The golden color, from which he takes his name, marks the back of his head and neck and is not visible from a distance. The turkey vulture in flight is, on the other hand, black and dark gray, and has a less pronounced forward thrust of the head than the eagle. Also, the eagle's wings are held more level when soaring, while tips of the vulture's wing feathers are more tipped up. A golden eagle in a "power dive" is a thrilling sight. He goes down with wings partially folded, and at such terrific speed that the wind-scream of his bulletlike passage is like the sound of a meteor.

## **The Mammals**

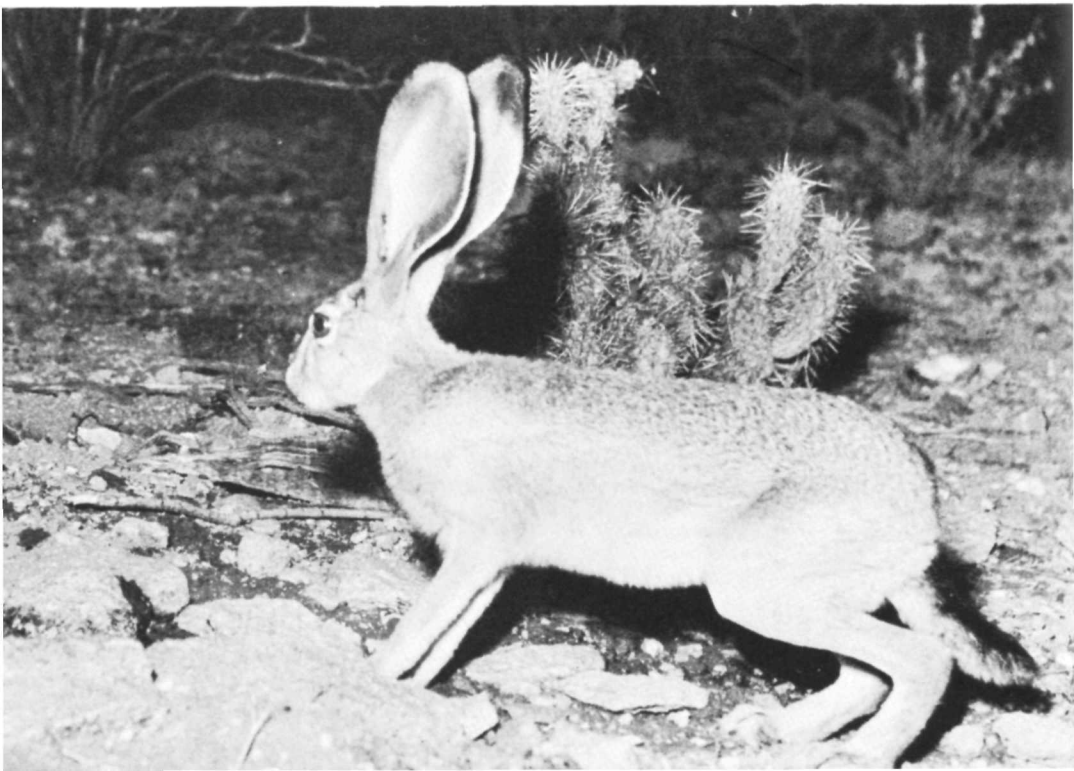
**T**hree characteristics of this monument contribute to the richly varied mammal life forms. These are the wide range between high and low altitudes, with associated temperature and moisture differences; the particularly rugged and varied contour of the land; and the ample and highly varied vegetative cover.

## **Common**

Most abundant and beautiful small animal is the bannertail kangaroo rat, one of three species of kangaroo rats which are common in grasslands surrounding the Chiricahuas. These little nocturnal rodents have extremely long hind legs and small front legs and feet—and they jump, kangaroo fashion. Of the three, the bannertail is the most showy, having colorful markings and a banner, or plume, of white hairs at the tip of his long tail. The principal diet is seeds, with some insects and fungi. Like some other mammals of arid and semiarid regions, kangaroo rats can exist without free water. Sufficient moisture to sustain life is extracted from seeds and other natural foods by a complex chemical process set up in their kidneys and other internal organs.

The common desert cottontail is the most abundant rabbit you see in the grassy flats and lower foothill slopes around these mountains. You should occasionally spot the long legged blacktail jackrabbit, who also has black tips to his ears. Seeing him flee, in graceful soaring bounds, you'll think he's as large as a small deer. Actually, he only reaches about 24 inches total length, counting the tail, although if so much wasn't turned up for ears he'd be six inches longer! For sheer speed, he can move

*Black-tail jackrabbit*



faster than any native predator in the Southwest. He can be outwitted, but not outrun by them.

A herd of pronghorns roamed the grassy approach to lower Bonita Canyon at one time, but they were killed or driven out many years ago.

As you move into the chaparral and forest areas of canyon and mountain, you enter whitetail deer country. This species is represented in southern Arizona by its smallest variety, a beautiful animal of brownish gray to cinnamon-buff color, and, of course, a large white tail. The tail flashes banner-like when half erect in flight.

Thick forest does not provide suitable habitat for deer, because deep shadows do not encourage growth of tender browse plants. But in Chiricahua the rough and irregular contour of the land, and the action of forest fires, have opened up large areas to chaparral, in which there is sufficient food to maintain a sizeable herd. Young foliage on scrub oaks, southwestern black cherry, hairy cercocarpus, desert ceanothus, algae, lichens, grasses, etc., afford plenty of food under normal conditions. By normal conditions we mean where there is sufficient predation by large carnivores to kill off enough of the fawns, the old, the diseased and weak, to prevent overpopulation and low vitality. The mountainous country within the monument shelters enough carnivores so that, for the present at least, there is little danger of overpopulation.

Skunks, as you may have guessed or smelled, hold their own rather well in and around man's activities. Here you may expect to see any of the following: (a) the spotted skunk, a terrific little stinker, is a pretty little animal and a good tree climber. He is nimble and playful, and a first rate mouser; (b) the striped skunk, known all over the United States, sometimes entirely black, usually with some white on the head and some partial body stripes; (c) the hooded skunk, with the tail longer than head and body, and hair of nape often standing up slightly into the suggestion of a hood or ruff; and (d) the hog-nosed skunk, a big white-tailed and white-topped fellow with a lot of tough, bare snout, for rooting after the grubs, worms, and insects which he eats.

Canyons of the Upper Sonoran Life Zone are a favorite haunt of the gray fox, and they are more numerous here than observations would indicate. They are shy, unobtrusive creatures, abroad mostly at night.



*Striped skunk*

One may venture close to the outer fringes of light from a campfire and occasionally be seen by an alert camper. Principal foods are rabbits, mice, grasshoppers and other insects, carrion, fruit, reptiles, and birds. This is the only fox in the United States which climbs trees. He accomplishes this by hugging the trunk with his forelegs and pushing with the hind legs.

A warning about foxes: if one wanders about aimlessly in the daytime, seeming unafraid of people or cars, beware! He is



*Gray fox*

probably sick, and may have rabies. Keep at a safe distance and notify a park ranger.

The bold and voracious rock squirrel is one of the commonest mammals in the Chiricahuas. He is the largest ground squirrel in his range, and is gray with a moderately bushy tail. He prefers rocky hillsides and cliffs. His favorite diet is native nuts, fruits, and berries, but he will also climb agave stalks to get at the fruit, and will rob birds' nests of eggs and young. He becomes a terrible campground nuisance, if permitted. It is not well to encourage ground squirrels by feeding them, because they will raid the camp larder; and they have been known to carry disease-causing insects and bacteria.

Cliff areas at all elevations are the home of the cliff chipmunk, the only chipmunk indigenous to the Chiricahuas. He is

a little fellow with a gray coat, marked with a distinct dark stripe down the middle of the back, faint stripes extending to the head, as well as head stripes. Like the rock squirrel, he eats nuts, fruits, seeds, and berries, and can carry quite a load of booty in his internal cheek pouches. A favorite food is the seed of ponderosa pine. Such disposition of seeds acts as a

*Ringtail*



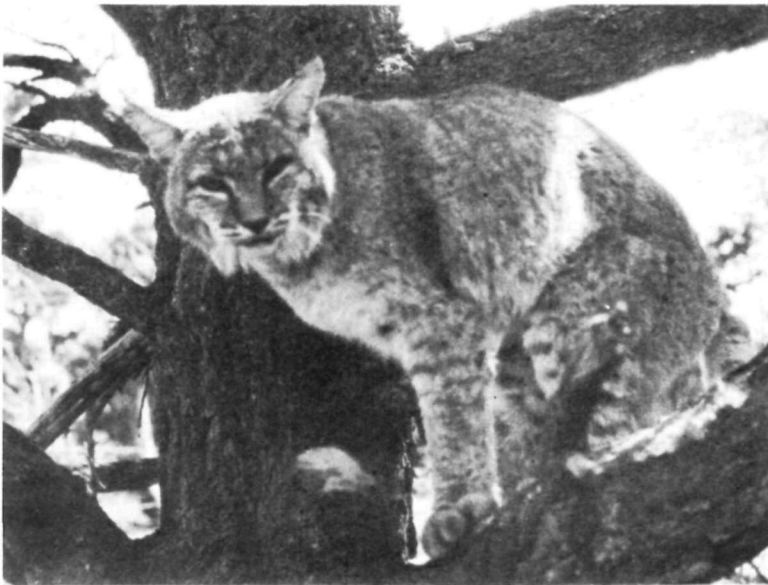
natural control to keep seedlings from becoming too numerous for the health of the forest.

The ringtail, also called ringtail cat and miner's cat (although more closely allied to the raccoon and coati), is believed more common here, although so shy as to be seldom seen. This beautiful little creature, with bushy tail as long as head and body combined, is an expert climber, completely at home in the cliffs. It chooses to spend a large part of its time on the ground, where it is a very fine mouser. Occasionally one is seen here in the campground area.

### **Occasional**

The bobcat is by far our most numerous member of the cat family, and occurs at all elevations. His body color is pale grayish-brown, streaked with black. The tip of his tail is black above and white below. He has tufts at the tips of his ears, smaller than those of his northerly relative, the lynx. Large feet give an appearance of clumsiness, but he is as fluid in his movements as other cats. He eats mostly meat, and takes rabbits or small deer. If his kill is too large for one meal, he often covers the uneaten part and returns to it later.

*Bobcat*



Porcupines are not often seen in the monument, and old-timers reported them as rarities in the 1880's and 1890's. Such rarity was probably caused by the fact that Chiricahua Apaches used to hunt the animal for food. You usually see a porcupine up a tree, not moving or saying a thing, so that, all in all, he is rather a dull fellow!

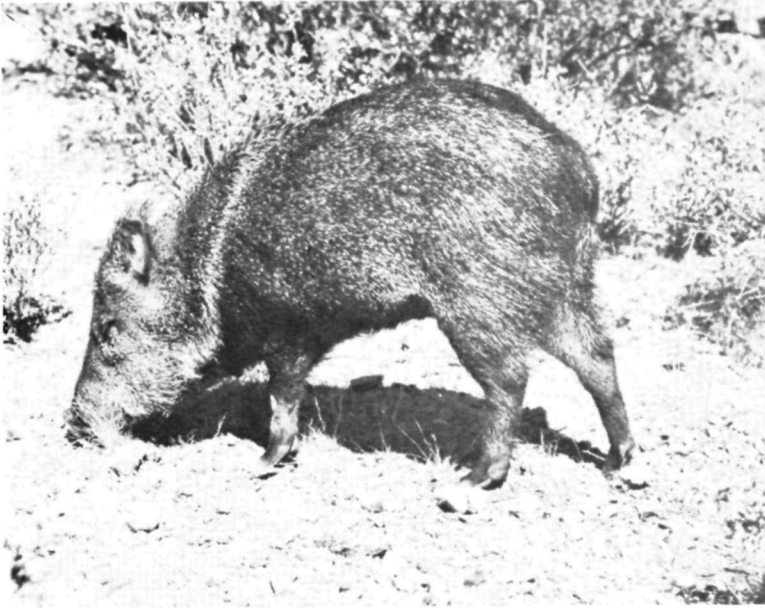
Coyotes are moderately abundant, and widely distributed in these mountains. Their usual practice of "summering high and wintering low" is reversed, for they winter in the highlands and come to lower levels in May. This intelligent and highly adaptable animal is wary of humans and much less likely to be seen than heard. Campers, and evening and early morning hikers, may hear the high tenor wail, ending in a series of sharp "yips," which are so characteristic of the coyote. The sound is chilling, and yet thrilling, for the person fortunate enough to hear it often feels a spine-tingling sense of linkage with time and wildness of all eternity.

The peccary, or javelina, apparently has never been abundant in the Chiricahuas, but a few occur in the chaparral

*Coyote, male*







*Peccary, or Javelina*

growth of middle and lower Bonita Canyon. This dark gray pig-like animal has massive shoulders and neck marked by a band of lighter color. The adult male will weigh from 40 to 65 pounds. The track is like that of a small deer, but less pointed in front. The peccary eats fruits, nuts, berries, herbs, roots, snakes, sluggish animals, and considers the pods and fruits of pricklypear cactus and the hearts of agave stalks to be delicacies.

A noisy, rapacious animal is the coati, a relative newcomer from Mexico and Central America. As recently as 1932 his kind were unusual in the Southwest, but by 1958 a band of about 25 of the sociable creatures was seen several times during the winter near monument headquarters. In summer they travel in smaller groups, usually one to three, and can be found in rocky areas with open forest or in nearby chaparral.

The coati is apt to be about at any hour, and will eat nearly anything. His long, pointed, flexible nose is adapted to rooting, and the long, tapered tail, often carried erect, is ringed like the raccoon's. The body is rusty brown to yellowish and grayish brown, and the face has dark and white contrasting patterns.



*Coati, in a pensive moment*

Expert climbers and powerful scrappers, they take care of themselves quite well.

The nocturnal habits of the raccoon, a relative of the coati, make it unlikely that you will see one here unless you take up a watching position near a garbage can. There are a number of these black-masked intellectuals of the animal world around, however, and their hand-like tracks are worth watching for in mud or trail dust. It is educational to see three of these rascals work as a team to remove garbage can lids, even when lids are held by spring-loaded clips!

### **Rare**

The Apache fox squirrel, near to eradication in the Chiricahua Mountains in the 1930's, is making a comeback, but is still not common. This is a large squirrel, with the upper body in varying shades of gray and underparts and legs a warm brown or reddish color. The long tail is bushy and dark, with a creamy fringe. For a tree squirrel, the Apache seems a clum-



*Mexican raccoon*

sy climber, probably because his intense curiosity induces inattention.

Black bears live in higher, inaccessible regions of the Chiricahuas, and occasionally enter the monument. Their tracks in the dust of trails appear rarely, and even more rarely does a person see bruin himself. Bears seem to have learned that survival is much more likely where man isn't.

The mountain lion, a large cat of tawny to grayish color, was once abundant in these mountains, serving as a natural check against overpopulation of deer. When stockmen began to graze cattle and horses in the grasslands below, the lion changed his diet and, through his depredations, became a victim of gun and trap to the extent that his numbers were greatly reduced. Since establishment of the monument he is protected in at least a part of his range, and has made a moderate comeback. If you find four-toed tracks, quite rounded, about three inches across, and see no claw marks, it is possible you have seen a lion track.

### **Quite rare**

The gray wolf, also called Mexican or lobo wolf, probably still drifts occasionally northward from Mexico into these mountains, as they do from time to time in the Huachuca Mountains west of here. These large members of the dog family are so rare you are very unlikely to see one. This wolf is much larger than the coyote, and runs with its bushy tail straight out behind or slightly up, unlike the drooping tail of the coyote. If you see such an animal, and it isn't somebody's German shepherd dog, be sure to report the exciting event to a park ranger.

Two spotted cats may occasionally drift in from Mexico. These are the ocelot, about twice the size of a house cat, and the jaguar, as large as a lion. The jaguar is more massively boned than the mountain lion, and according to some authorities can be expected to reach a greater weight.

## **The Reptiles**

**N**o doubt one of your first questions, if you plan to camp or hike in Chiricahua National Monument, will be "Are there rattlesnakes here?" The answer is yes. In fact, they are here

in considerable numbers. However, most campers never see one. Most snakes avoid humans unless, of course, the meeting is sudden and startling. The mere presence of rattlesnakes indicates a need for due caution and respect for their potential.

### **Poisonous snakes**

The largest and most noted species of rattlesnake here, the western diamondback, is at its extreme upper limit of normal range in lower Bonita Canyon. More at home in lower, drier, and hotter country, this big fellow is seldom seen in the monument.

Rocky, wooded canyons at all elevations make the area a favored home for the northern black-tailed rattlesnake. Because of their abundance, it is well for you to watch your step during warm weather, lest you startle one into striking. By all means carry a flashlight when walking at night. While unusual, it is interesting to note that this species has been seen here in young pine trees as much as 10 feet from the ground. This large rattler has big scales on the top front of the head, a black snout and black tail, and the body is a dull olive-green. Rodents are the favorite diet.

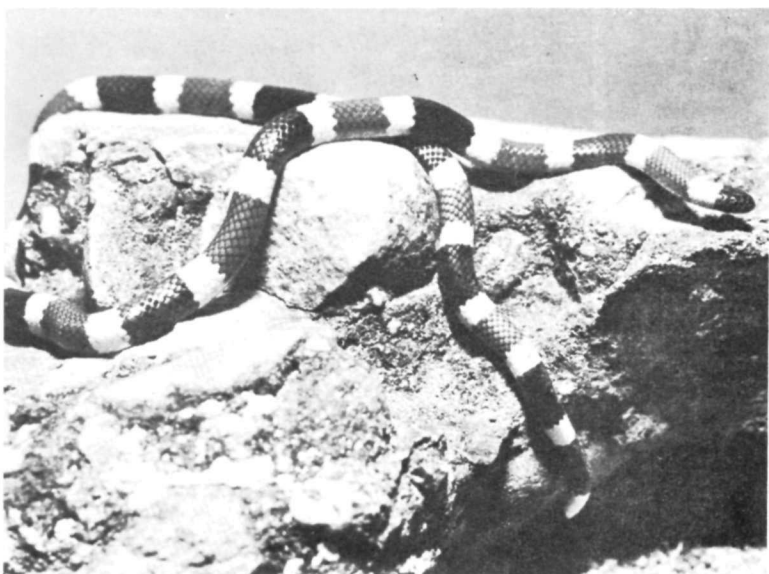
Two small rattlesnakes frequent rocky upper canyons in the monument. The twin-spotted rattlesnake is a Mexican species entering the United States only in southeastern Arizona, and has a fondness for slide rock areas. Its competitor for food, primarily small rodents and lizards, especially Yarrow's spiny lizards, is the banded rock rattlesnake. The twin-spotted has several rows of spots, with two large and distinct rows along the back. The banded rock rattlesnake has a mottling of dark flecks and blotches which unite to form conspicuous spots or crossbands. Neither is aggressive, and the few instances of their striking have occurred when one was accidentally stepped on or grasped by a person climbing a rock ledge. Their rattle makes a sound which is barely audible.

The only other dangerously poisonous snake here is the Arizona coral snake, closely allied to the cobra and having similar venom. However the coral snake has such a tiny mouth there are few recorded cases of human bites. The name is probably derived from the beautiful coloration — bright bands of red and black alternately, separated by yellowish white, going entirely around the body. The head is black in front. The coral snake is found only at lower elevations, and usually at night.



*Banded Rock Rattlesnake*

*Arizona Coral Snake*



## **Harmless snakes**

Only some of the more common ones will be described here. Representing an extremely well known clan frequently called "bull snakes" is our Sonora gopher snake. He is a handsome fellow, with light body color and numerous spots along the sides, and more or less rectangular dark "saddles" across the back. Big and impressive, reaching 6 feet or more in length, he is often mistaken for a rattler by the casual or careless observer. The illusion is even more vivid when he vibrates his tail tip so rapidly against dry leaves that a rattling sound is made. But he lacks the tail rattles, the broad rattlesnake head, and the distinct pit between the eye and nostril that is characteristic of the rattlesnake.

Gopher snakes are at home in nearly every type of Arizona climate below the 9,000 foot elevation. Throughout their range, wherever it overlaps any of the larger species of rattlesnakes, they are competitors for the same rodent foods.

Another colorful snake, sometimes killed because of resemblance to the coral snake, is the Arizona mountain kingsnake. This species occurs at higher elevations in the monument, while the coral snake is limited to lower elevations. There are other differences. This adult kingsnake is much larger than the coral;

*Sonoran gopher snake*



it has a light-colored snout by contrast with the black front portion of the head of the coral; and the black markings are in the form of saddle-shaped blotches within the red, whereas the black and red of the coral snake are clearly defined bands, separated by a white or creamy band.

It will be a notable occasion if you should see a green rat snake in the Chiricahuas. But there are some here in the middle and lower elevations. This harmless snake is uniformly gray or green above, with whitish underparts. Don't become too inquisitive if you find one, for, like garter snakes, when annoyed they discharge a most offensive odor from anal scent glands.

The slender, quick-moving Sonora whipsnake is found here. He protects himself by biting with the numerous needlelike teeth with which he holds such food as other snakes (including rattlesnakes), lizards, rodents, birds, young turtles, and insects. The adult whipsnake may be 3 or 4 feet long, with head broader than neck. The back is of a dark color, with sides lighter, and with 2 or 3 sidestripes starting behind the head and fading out before reaching the tail. They are most active in mid-morning and mid-afternoon.

Not unlike a small whipsnake in general appearance, the mountain patch-nosed snake is distinguishable by a greatly enlarged rostral scale. This scale, forming the mid-upper lip in reptiles, goes upward with a free edge and extends back a short distance onto the forehead. Another distinguishing mark is a fairly wide white or yellowish stripe running down the middle of the back. Active in the daytime, this quick snake eats many lizards, and is more partial to cool, moist places than his desert cousins.

The western garter snake is another one with a stripe. In fact, it has three, one along the back and two along the sides. It only reaches a length of 12" to 24" but effectively serves to keep the tree-frogs, and young toads and frogs, from becoming too numerous for their health. It likes water, but in dry season is sometimes found some distance from it.

The Sonora lyre snake is named from the crude dark outline of the old-fashioned musical instrument on its broad head. It has a slender neck, bulging eyes, with vertically elliptical pupils, like those of a cat, and comes out mostly at night. However, you should not conclude that *all* snakes with vertical pupils are night prowlers, or that all with round pupils are active only by day.



## Lizards

You probably know that the only poisonous American lizards are the Gila monster and its Mexican relative, the beaded lizard. Although Gila monsters occur in the grasslands near the base of the Chiricahua Mountains, it is not likely you will see them here. Should you come across one elsewhere, you will find it quite different from other Arizona lizards. The body is heavy, tail thick, and there is an overall covering of beadlike tubercles, irregularly colored black or brown and yellow-orange.

Of the several lizards that you may see, the Chiricahua tree lizard is the most common. This particular species seems to have developed in, and lives almost exclusively in, the comparative isolation of the Chiricahua and nearby Dos Cabezas Mountains, although it is very similar to other species found throughout Arizona below the 9,000 foot level. It is small and inconspicuous because of its overall coloring—irregular, dark-gray, transverse markings on a lighter ground color. The throat is light blue in the female, dark blue in the male. Intensely curious, it lets you approach within a few inches before scurrying off. The tree lizard eats all types of smaller insects, and is one of the first to come out in the spring and one of the last to go into winter quarters in late autumn.

Much more likely to be seen, sometimes around the campground and visitor center, but surely, in warm weather, among the rocks at Massai Point and along the trails to Echo Canyon, Heart-of-Rocks, and Natural Bridge, is the Yarrow's spiny lizard. This native of Mexico reaches the United States only in the mountains of southeastern Arizona and southwestern New Mexico.

You will know this lizard by his distinctive appearance. He has a black collar, bordered in white. Upper body color is uniform, but may range from light gray to almost black, depending upon the time of day or season. Like other reptiles, lizards depend on environmental temperatures to control body heat. In high country, they bask in the sun a great deal, absorbing heat through the skin. More heat is absorbed by dark colors, and nature has provided these lizards with the ability to change color according to heat needs. Consequently, some lizards will be darker colored early or late in the day or season when temperatures are low, and lighter in warmer periods.

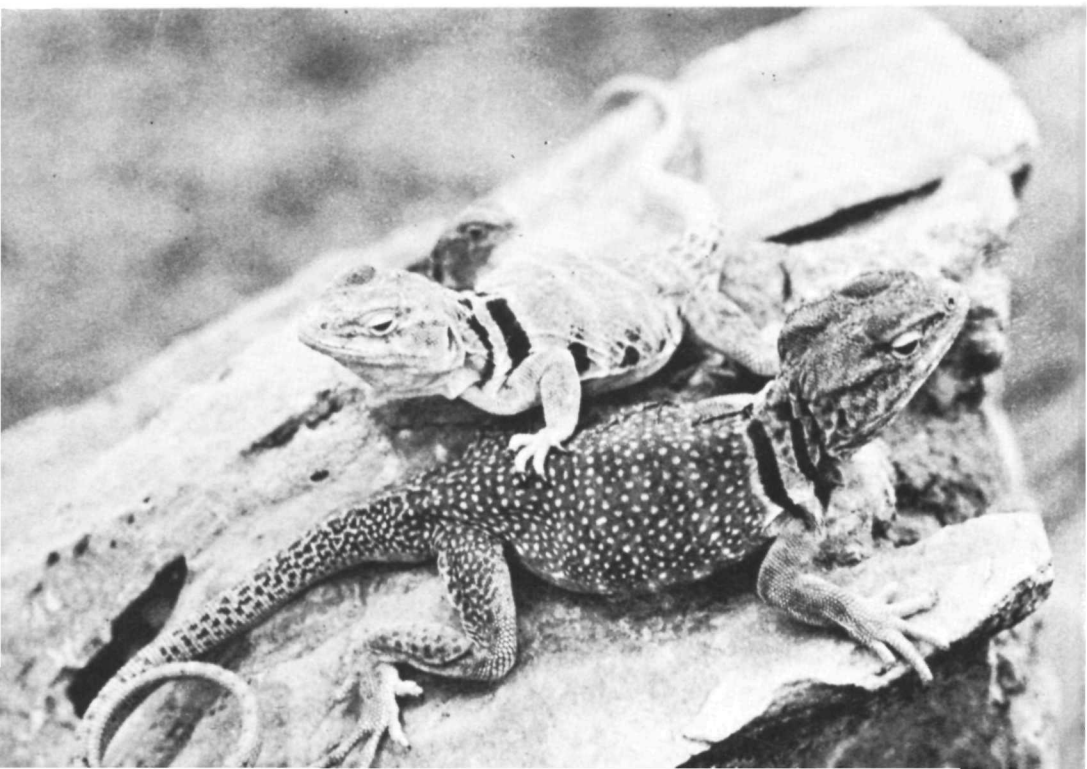
Yarrow's spiny is one of the few lizard species giving birth to its young alive instead of by laying eggs. The brood usually numbers about six, and it is surprising that the species is so numerous, since it is preyed upon by several species of snakes and large birds.

The Clark's spiny lizard is larger and less common than Yarrow's. He is more at home on trees than among the rocks. As you walk along the forest floor in Bonita Canyon, you may hear a rustling sound and see bits of dry bark falling from a tree. Chances are that a Clark's spiny lizard has spotted you and has started a game of hide-and-seek as he tries to keep out of sight while you move around the tree looking for him. Dark shoulder bars and distinct light and dark bands around the forelegs are noticeable markings of this species, which feeds on larger insects, as well as spiders, scorpions, and small centipedes.

The eastern fence lizard, about the size of the Yarrow's spiny, but with two elongate whitish stripes on either side of the body, and without the "collar," is also spiny. Males have distinct blue markings on either side of the throat. Look for them on trees, on the ground, and especially along fence rows.

The big-headed, slender-necked, long-tailed, western collar-

*Western collared lizards*



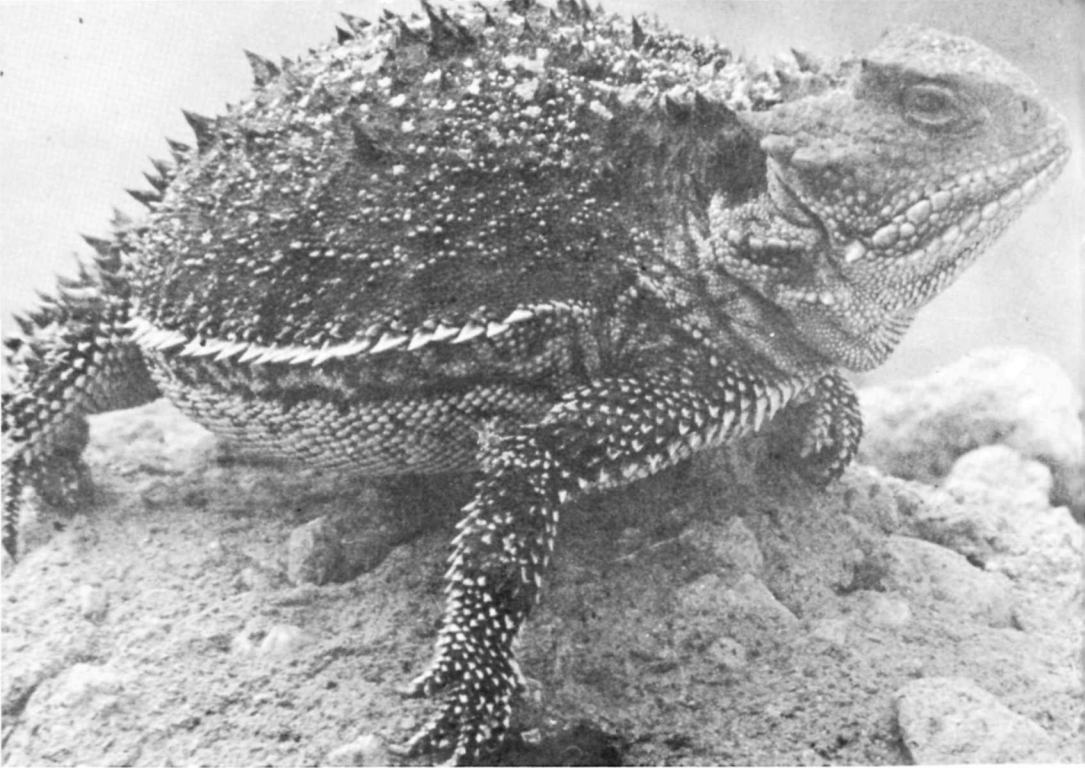
ed lizard makes his home in the lower canyon areas where chaparral is sparse. Although he looks clumsy, he can move with great speed, and when in a particular hurry will often rise up and run on his hind legs, dinosaur fashion. He makes up for his ungainly physical appearance with elaborate coloration. He has a double black collar, not always closed at top. The body is greenish or yellowish, with irregular spots and blotches. The very long tail is light in color with dark spots. The throat of the male is green to blue, and there are bluish patches on the underside. He is carnivorous, eating other lizards, small snakes, and insects. And he is pugnacious toward humans, although his tiny teeth will not even puncture the skin of a finger—which must be highly frustrating to him, because he tries so hard.

The headquarters and campground areas are favorite haunts of the heat-loving whiptail lizards, and at these places they will be seen nosing along the ground for small insects. The little striped whiptail is quite slender, with a long tail, moving with great speed when frightened. The body color pattern consists of a dark background with several long whitish or yellowish stripes fading out near the tail. A larger relative here, of similar habits, is the Arizona whiptail, spotted as well as striped.

Incidentally, the tails of these and some other lizards are expendable. If a predator seizes the lizard by the tail that member becomes rather easily detached, thereby permitting the would-be victim to escape. A new tail grows out eventually, but is usually smaller and less ornate than the original.

Other lizard species live in the monument, all playing a part in maintaining the balance of life. The most common of these lesser groups is the short-horned lizard, often called "horned toad," because of the conspicuous spines or "horns," and broad, flat body. This species has an unusually wide range, extending to above 10,000 feet altitude in the San Francisco Mountains of northern Arizona. The young are born alive in early summer. The babies are about as large as a button, and just as cute as they can be.

The secretive Great Plains skink, and the Arizona night lizard, are quite difficult to find here. Earless lizards, more characteristic of lower sandy areas, are to be looked for, as well as the banded gecko, in lower levels. The latter is a night prowler and is incredibly delicate and frail looking.



*Short-horned lizard*

### **Turtles**

The ornate box turtle is the only species of his clan occurring here. This reptile is limited to the lower part of Bonita Canyon, where the items of food that make up his varied diet are more likely to be available. He eats trapped rodents, horned lizards, insects, earthworms, and many other things. He is mild tempered and rarely bites. If he does, it is not dangerous.

## **Amphibians**

**F**rogs and toads are fairly well represented in Chiricahua, despite an almost complete lack of permanent surface streams and ponds.

The best place to look for the canyon tree frog is near the little area in Bonita Canyon, opposite the visitor center, where there is a permanent short surface flow of water. He will be

hard to see, for he blends in well with the trees and rocks to which he clings with padded discs at the ends of his toes. The vocal effort of this fellow sounds much like that of a young sheep with a gravelly voice, and can be heard for some distance.

Summer rain pools furnish enough water for the red-spotted toad to breed, and for development of young through the tadpole stage. After that, not much water is needed for survival. This toad is mainly a night prowler, quite active and alert, moving well over rough ground. The mating call of the male is a high-pitched, bird-like trill. These are small toads, with red or buff warts and general body color of gray through reddish brown.

The larger southwestern Woodhouse's toad frequents the canyon bottom in summer. It is the only toad you are likely to see here with a clearly defined vertebral white stripe running from the nose to where the tail isn't.

Noisiest of southeastern Arizona amphibians are the spadefoot toads, of which there are several species in and around the Chiricahua Mountains. The male of the western spadefoot sounds like a very loud cat with a snoring purr. The Couch's spadefoot sounds more like a lamb bleating in pain. Both puff out their throats like balloons and give off a most unusual sound when wooing a mate in the breeding season. When they "sing" together around a rain pool, the din is terrific.

The leopard frog, North America's most widely distributed amphibian, is a handsome, slippery, spotted bundle of squirmy coiled springs and muscle, and can be expected at any permanent water hole. His song is a low, guttural croak, not at all unpleasant to hear, and may even be given under water.

## **Human History**

### **Early man**

**T**he story of man in southeastern Arizona goes back well over 10,000 years ago, to a period when rainfall was much heavier than it is today, and the climate was cooler in the wake of the Ice Age. Lakes, marshes, and ponds were common in flatter ground, and vegetation was lush. Large animals, such as the mammoth, direwolf, bison, tapir, and wild horse roamed

the region. The people of this epoch were big game hunters, and of necessity were highly mobile. They carried essential items only, and camped near the water holes favored by big game.

By about 8,000 years ago, rainfall had so greatly reduced, and temperatures had so increased, that the larger game animals could no longer find sufficient plant food, and became extinct. Man turned to smaller game, such as deer and rabbits, for his meat supply. At the same time, he became more dependent on nuts, fruits, roots, seeds, and other wild plant foods for a living. He fashioned new tools for collecting, grinding, and preparing vegetal foods.

By 500 B. C., the people had become partially sedentary. They selected favorable spots for hunting and gathering in season, and built small wikiups or jacales of poles, thatch, and mud to protect them from summer heat and cold winter winds. They dug storage pits in the floors of dwellings to protect surplus food from weather and rodents.

Shortly before the time of Christ they picked up the art of making pottery, through contacts with nomadic people who had learned from the higher civilizations of Mexico. Presumably they now had agriculture.

As their culture advanced during the Christian era, they congregated in small villages, buried their dead with offerings, and constructed sturdier houses.

### ***The Spaniards arrive***

The Coronado expedition of 1540 passed through the San Pedro Valley region of Arizona, over 60 miles west of the Chiricahuas, as they journeyed northward seeking the legendary Seven Cities of Cibola. Later, Spaniards arrived in southeastern Arizona in 1690, and found descendants of the early, pre-Spanish peoples living in the Santa Cruz and San Pedro Valleys. The Spanish called them Sobaipuris. They were closely related to the Pimas and Papagos.

Nomadic Athapaskan tribes, including ancestors of the Chiricahua Apaches, apparently came into the Southwest in the 16th Century, but are not known to have reached southern Arizona until late in the 17th Century. Groups of these raiders and hunters established themselves in the area extending from the Gila River headwaters south into the Chiricahua Mountains.

The Apache group ranged east and west, from southwestern New Mexico to the San Pedro River in Arizona. They began to attack the eastern Sobaipuris shortly after the Spanish arrived to colonize and establish missions, and in 1762 the Sobaipuris were forced to join with the more westerly Papagos, among whom they gradually lost their identity. Meanwhile, the Spanish, representing an advance of the white man, were themselves harassed by the Apaches.

### **Arizona Territory**

After ratification of the Gadsden Purchase in 1854, that portion of Arizona including the Chiricahua Mountains came under control of the United States. Trouble with the Apaches was inherited from Mexico along with the territory, and for many years there were raids and counter-raids, massacres, and other injustices by both sides.

Apache Pass, at the north end of the Chiricahuas, was one of the few watering places en route from the Rio Grande to Tucson and California. Before the white men came that way, the springs in the pass had been a favorite rendezvous for the Apaches. The Spanish are presumed to have known about the pass and the springs as early as 1780, but American emigrants, bound for California and the gold fields in 1848, used the pass only infrequently.

Ten years later, the Butterfield Overland Mail stages began operating through the pass on the run from St. Louis to the Pacific, even though the passage was considered one of the most dangerous parts of the trip.

### **Cochise**

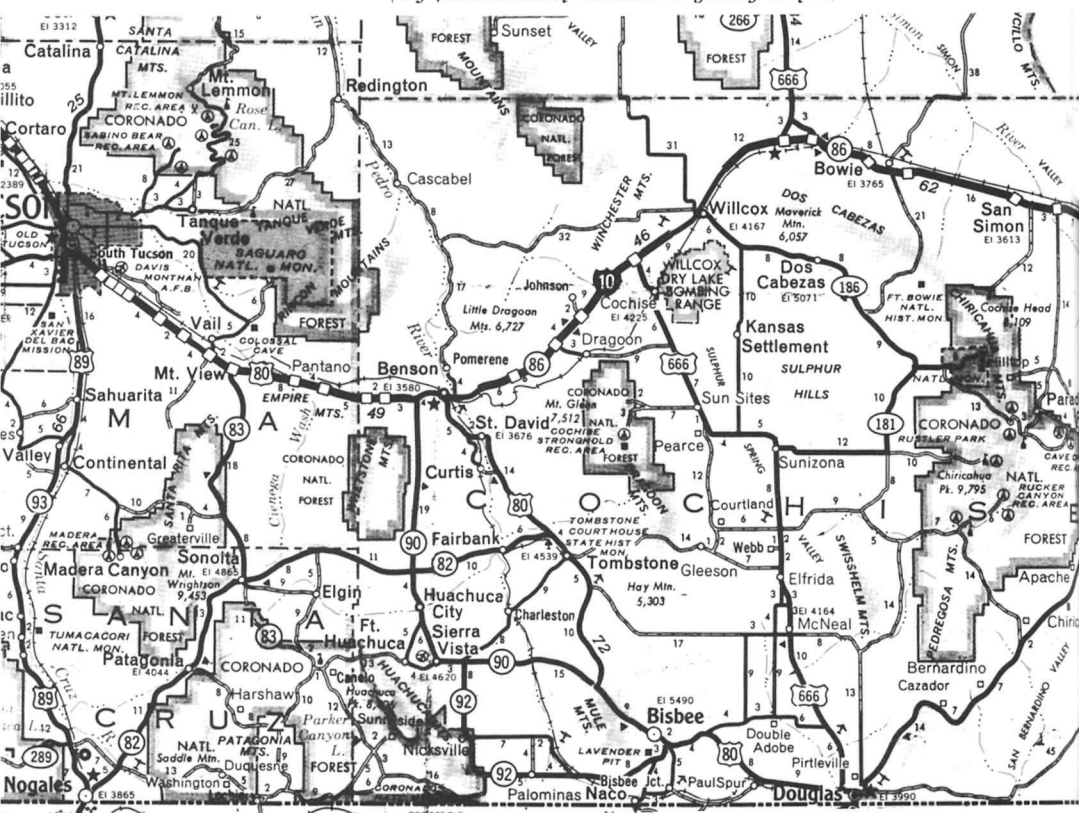
At this time, the Chiricahua Apaches under Cochise spent part of their time in the Dragoon Mountains to the west, and ranged as far east as the Chiricahuas. Their leader was somewhat peaceably disposed toward the whites, until, in 1861, he was wrongfully accused in the kidnapping of a white boy. Subsequent events, including capture and eventual hanging of the wife, son, brother, and two nephews of the Indian leader at the stage station, filled Cochise with an implacable hatred. Early in the year his people established their more or less permanent settlement in the Dragoons, and Cochise and his followers went

on the warpath, all but choking off travel through Apache Pass. For several years the westward movement into southern Arizona was then practically at a standstill.

Even military forces had to fight their way through against the brilliant strategy of Cochise. As the upshot of a series of civilian and military skirmishes, with considerable loss of life, Fort Bowie was established in the pass in 1862 by General James H. Carleton. Military escorts were now available to assure safe passage.

For 6 years after the end of the Civil War, Cochise and his people ravaged ranches and settlements in southeastern Arizona in a bloody war of extermination against the whites. Soldiers at Fort Bowie, which remained active until 1894, had one encounter after another with Chiricahua Apaches. Finally, in 1872, Colonel O. O. Howard, with the help of Thomas J. Jeffords, an army scout, achieved peace with Cochise. In the wake of this action, the Chiricahuas retired to a reservation in the Sulphur Springs Valley. Jeffords was appointed tribal agent with headquarters at Sulphur Springs. Later, a reservation was established at Pinery Canyon, two miles from the present site of the monument and south of the west entrance. During this

Map of Southeastern Arizona  
(By permission of Arizona Highway Dep't.)





interlude of peace, the Apaches probably hunted in the Chiricahua Mountains.

### **Geronimo**

After the death of Cochise in 1874, the Chiricahuas were moved to the San Carlos Reservation, but they did not stay long. A renegade group under Natchez, a son of Cochise, left

*Unable to obtain photograph of Cochise, we present Nahche, his second son, as example of physical type of Chiricahua Apaches.*



the reservation and returned to its homeland. Geronimo, one of the most notorious of all Indian outlaws, was with this band. While they were on the loose, there were several skirmishes in what was then called the Rock Wonderland. A prospector named Bridger, who lived with his wife in Bonita Canyon, also fought Indians from his cabin. A marker at Mrs. Bridger's grave, erected in her memory by friends, remains in Bonita Park today.

*An 1882 Photo of Geronimo*



The Apache wars ended in 1886 with capitulation of Geronimo in Skeleton Canyon, southeast of the Chiricahua Mountains. A few renegades still roamed about, among them one known as Big Foot Massai. While passing through Lower Bonita Canyon on his way to the San Carlos Reservation in 1892, Massai stole a horse from one of the ranchers. Several of the settlers went after him, but lost the trail at what is now called Massai Point.

### **Early white settlers**

Near the end of the Apache campaigns, settlers started moving into Sulphur Springs Valley. The Riggs family established a homestead 5 miles west of the monument in 1879. Louis Preu built a block-house home near the mouth of Bonita Canyon, and in 1880, Colonel J. Hughes Stafford moved into a cabin which is now a part of the Faraway Ranch. Sergeant Neil Erickson, who had served in the Apache campaigns with the Army, established a homestead near the Stafford cabin in 1886.

Chatto, an Apache chieftain, told the early pioneers that the rocky area near their homes was considered sacred ground by the Indians, and that the spirits of their dead lingered there. The Apaches called the area "say Yahdesut," meaning Point of Rocks. Messrs. Erickson, Preu, and Stafford were probably the first white men to penetrate the sacred area when they went looking for Big Foot Massai.

E. J. Hand, another of the increasing number of settlers in the Sulphur Springs Valley, first visited the rocky wonderland during Christmas week in 1893. Edward Murray Riggs, a 15-year old boy, and Ben Erickson, son of Neil Erickson, saw the scenic beauty from the top of Sugarloaf Peak in 1901. When they returned home, young Riggs told his parents that he wanted to see more of the wonderful country.

### **Chiricahua National Monument**

Years passed, and Riggs grew up and married. With his wife, Lillian, he operated the Faraway Guest Ranch, which they established at the entrance to Bonita Canyon. When able to leave their business and spend some time among the unusual rock formations, they took many pictures, some of which they

sent to the county fair at Douglas in 1922, and to chambers of commerce at Bisbee, Douglas and Phoenix. The history of the establishment of Chiricahua National Monument actually began with the explorations and photography by Mr. and Mrs. Riggs.

The photographs which were displayed at Douglas attracted the attention of Dr. J. P. Armstrong, physician and world traveler. Dr. Armstrong went to Faraway Ranch and was taken into the scenic mountain country, where he took many pictures of his own. He later asked that arrangements be made for a visit by Governor G. W. P. Hunt. Edward Riggs and several of his neighbors cut a trail through the roughest part of what is now called Upper Rhyolite Canyon so that the Governor could enter on horseback.

The Governor's party, consisting of newsmen, photographers, and local dignitaries, went into the area on August 3, 1923. The publicity that developed from the trip aroused a great deal more interest, and it was only a short time later that business men from Douglas and Bisbee, with some outside help, succeeded in having the sacred ground of the Apaches set aside as a National Monument. A Presidential proclamation establishing Chiricahua National Monument was signed by President Calvin Coolidge on April 18, 1924.

The area was administered by the supervisor of Coronado National Forest until an Executive Order of June 10, 1933 transferred the monument, along with a number of other national monuments, to the jurisdiction of the National Park Service. During the Forest Service administration construction of the Bonita Canyon road was started.

A Civilian Conservation Corps camp was established in 1934 on land near the present visitor center. Enrollees at the camp completed the road that year, under supervision of Frank Pinkley, then superintendent of Southwestern National Monuments, headquartered at Casa Grande National Monument, Coolidge, Arizona. The monument was dedicated with ceremonies held at Massai Point on September 3, 1934.

The C. C. C. Camp enrollees completed all the major developments, including roads, trails, campground, water and telephone lines, and a visitor center. The work took nearly 6 years. The same Edward Riggs who so admired the area as a



boy served as CCC trail foreman from 1935 to 1941. He supervised construction of the Sugarloaf, Echo Canyon, and Heart-of-Rocks trails. The Echo Canyon trail is considered a masterpiece of trail engineering.

National Park Service employees are here to protect the area and serve you. Enjoy this "mountain island in a sea of grass," soak up the wilderness feel, spend some time here, and when curious or in doubt, *ask a ranger!*

### **Administration**

Chiricahua National Monument is administered by the National Park Service, U. S. Department of the Interior. A superintendent, whose address is Dos Cabezas Star Route, Willcox, Arizona 85643, is in immediate charge.

#### *For all time*

Chiricahua National Monument, as a unit of the National Park System, is dedicated to conserving the scenic, scientific, and historic heritage of the United States for the benefit and enjoyment of its people, not only for this generation but for all generations to come. If your visit destroys nothing, leaves nothing but footprints, and takes away nothing but photographs and happy memories, you are carrying out your sacred trust as American citizens of today, preserving for tomorrow.

*Cochise Head, looking north from Massai Point*



Be especially careful to use only areas that have been developed for the purpose, and remember that a carelessly tossed match in dry weather could within minutes turn this beautiful place into a raging holocaust.

## SUGGESTED READINGS

- BRANDT, HERBERT, *Arizona and Its Bird Life*. The Bird Research Foundation, Cleveland, Ohio, 1951.
- BURT & GROSSENHEIDER, *A Field Guide to the Mammals*. Riverside Press, Inc. Houghton-Mifflin Co., Boston, 2nd Ed. Rev. 1964.
- KEARNEY, THOMAS H., and PEEBLES, ROBERT H., *Arizona Flora*. University of California Press, Berkeley & Los Angeles, California, 2nd. Ed. 1960.
- OLIN, GEORGE, *Mammals of the Southwest Deserts*. Southwestern Monuments Association, Globe, Arizona. 1959.
- PALMER, RALPH S., *The Mammal Guide*. Doubleday & Co., Inc., 1954.
- OLIN, GEORGE, *Mammals of Southwest Mountains and Mesas*. Southwestern Monuments Association. Globe, Arizona. 1961.
- PEATTIE, DONALD CHILROSS, *A Natural History of Western Trees*. Houghton Mifflin Company, 1953.
- STEBBINS, ROBERT C., *Amphibians and Reptiles of Western North America*. McGraw Hill Book Company, Inc., 1954.
- VARIOUS AUTHORS, *Wild Animals of North America*. National Geographic Society, Washington, D. C., 1960.





# Appendix

## List of Common Names with Scientific (Latin) Equivalents

### PLANTS

- Alligator juniper—*Juniperus deppeana*  
Apache pine—*Pinus engelmannii*  
Arizona cypress—*Cupressus arizonica*  
Arizona madrone—*Arbutus arizonica*  
Arizona pine—*Pinus ponderosa*, var. *arizonica*  
Arizona sycamore—*Platanus wrightii*  
Arizona white oak—*Quercus arizonica*  
Birchleaf buckthorn—*Rhamnus betulaeifolia*  
Chihuahua pine—*Pinus leiophylla*, var. *chihuahuana*  
Desert ceanothus—*Ceanothus greggii*  
Douglas-fir—*Pseudotsuga menziesii*  
Emory oak—*Quercus emoryi*  
Hairy cercocarpus—*Cercocarpus breviflorus*  
Mexican pinyon—*Pinus cembroides*  
Netleaf oak—*Quercus reticulata*  
One-seed juniper—*Juniperus monosperma*  
Palmer Agave—*Agave palmeri*  
Parry agave—*Agave parryi*  
Pointleaf manzanita—*Arctostaphylos pungens*  
Ponderosa pine—*Pinus ponderosa*  
Rubber rabbitbrush—*Chrysothamnus nauseosus*  
Sacahuista—*Nolina microcarpa*  
Schotts yucca—*Yucca schottii*  
Silverleaf oak—*Quercus hypoleucoides*  
Skunkbush sumac—*Rhus trilobata*  
Southwestern black cherry—*Prunus serotina*  
Toumey oak—*Quercus toumeyi*  
Wheeler sotol—*Dasylirion wheeleri*

### BIRDS

- Acorn woodpecker—*Melanerpes formicivorus*  
Arizona woodpecker—*Dendrocopus arizonae*  
Ash-throated flycatcher—*Myiarchus cinerascens*  
Black-chinned hummingbird—*Archilochus alexandri*  
Black-headed grosbeak—*Pheucticus melanocephalus*  
Black-throated gray warbler—*Dendroica nigrescens*  
Bridled titmouse—*Parus wollweberi*  
Canyon wren—*Catherpes mexicanus*  
Cassin's kingbird—*Tyrannus vociferans*  
Common raven—*Corvus corax*  
Coppery-tailed trogon—*Trogon elegans*  
Coues' flycatcher—*Contopus pertinax*  
Gambel's quail—*Lophortyx gambelii*  
Golden eagle—*Aquila chrysaetos*  
Great horned owl—*Bubo virginianus*  
Hairy woodpecker—*Dendrocopus villosus*  
Harlequin quail—*Cyrtonyx montezumae*  
Mexican jay—*Aphelocoma ultramarina*  
Mexican junco—*Junco phaeonotus palliatus*  
Olivaceous flycatcher—*Myiarchus tuberculifer olivascens*  
Olive-sided flycatcher—*Nuttallornis borealis*  
Oregon junco—*Junco oreganus*

## BIRDS (Cont'd)

- Painted redstart—*Septophaga picta*  
 Pigmy nuthatch—*Sitta pigmaea*  
 Poor-will—*Phalacrocorax nuttallii*  
 Red-breasted nuthatch—*Sitta canadensis*  
 Red-shafted flicker—*Colaptes cafer collaris*  
 Roadrunner—*Geococcyx californianus*  
 Robin—*Turdus migratorius*  
 Rufous-sided towhee—*Pipilo erythrophthalmus*  
 Say's phoebe—*Sayornis saya*  
 Scaled quail—*Callipepla squamata*  
 Scott's oriole—*Icterus parisorum*  
 Screech owl—*Otus asio*  
 Solitary vireo—*Vireo solitarius*  
 Steller's jay—*Cyanocitta stelleri*  
 Turkey—*Meleagris gallopavo*  
 Turkey vulture—*Cathartes aura*  
 Violet-green swallow—*Tachycineta thalassina*  
 Western kingbird—*Tyrannus verticalis*  
 Western tanager—*Piranga ludoviciana*  
 Western wood pewee—*Contopus sordidulus*  
 Whip-poor-will—*Caprimulgus vociferus*  
 White-breasted nuthatch—*Sitta carolinensis*  
 White-necked raven—*Corvus cryptoleucus*  
 White-throated swift—*Aeronautes saxatalis*  
 Wilson's warbler—*Wilsonia pusilla*

## MAMMALS

- Apache fox squirrel—*Sciurus nayaritensis chiricahuae*  
 Bannertail kangaroo rat—*Dipodomys spectabilis*  
 Black bear—*Ursus americanus*  
 Blacktail jackrabbit—*Lepus californicus*  
 Bobcat—*Lynx rufus*  
 Coati—*Nasua narica*  
 Coyote—*Canis latrans*  
 Cliff chipmunk—*Eutamias dorsalis*  
 Desert cottontail—*Sylvilagus audubonii*  
 Gray fox—*Urocyon cinereoargenteus*  
 Gray wolf—*Canis lupus*  
 Hog-nosed skunk—*Conepatus leucurus*  
 Hooded skunk—*Mephitis macroura*  
 Jaguar—*Felis onca*  
 Mountain lion—*Felis concolor*  
 Ocelot—*Felis pardalis*  
 Peccary—*Pecari angulatus*  
 Porcupine—*Erethizon dorsatum*  
 Pronghorn—*Antilocapra americana*  
 Raccoon—*Procyon lotor*  
 Rock squirrel—*Citellus variegatus*  
 Spotted skunk—*Spilogale putorius*  
 Striped skunk—*Mephitis mephitis*  
 Whitetail deer—*Odocoileus virginianus*

## REPTILES

- Arizona coral snake—*Micruroides euryxanthus*  
 Arizona mountain kingsnake—*Lampropeltis pyromelana*  
 Arizona whiptail—*Cnemidophorus sacki stictogrammus*  
 Banded rock rattlesnake—*Crotalus lepidus klauberi*  
 Chiricahua tree lizard—*Uta ornata chiricahuae*  
 Clark's spiny lizard—*Sceloporus clarkii clarkii*  
 Eastern fence lizard—*Sceloporus undulatus*  
 Gila monster—*Heloderma suspectum*  
 Green rat snake—*Elaphe triaspis intermedia*  
 Little striped whiptail—*Cnemidophorus inornatus*

## REPTILES (Cont'd)

- |  |  |
|--|--|
| Mountain patch-nosed snake— <i>Salvadora grahamiae grahamiae</i>     | Sonora whipsnake— <i>Masticophis bilineatus bilineatus</i>   |
| Northern black-tailed rattlesnake— <i>Crotalus molossus molossus</i> | Twin-spotted rattlesnake— <i>Crotalus pricei</i>             |
| Ornate box turtle— <i>Terrapene ornata ornata</i>                    | Western collared lizard— <i>Crotaphytus collaris baileyi</i> |
| Short-horned lizard— <i>Phrynosoma douglassi</i>                     | Western diamondback rattlesnake— <i>Crotalus atrox</i>       |
| Sonora gopher snake— <i>Pituophis catenifer affinis</i>              | Western garter snake— <i>Thamnophis elegans</i>              |
| Sonora lyre snake— <i>Trimorphodon lambda</i>                        | Yarrow's spiny lizard— <i>Sceloporus jarrovi jarrovi</i>     |

## AMPHIBIANS

- |   |   |
|---|---|
| Canyon treefrog— <i>Hyla arenicolor</i>     | Southwestern Woodhouse's toad— <i>Bufo woodhousei australis</i> |
| Couch's spadefoot— <i>Scaphiopus couchi</i> | Western spadefoot— <i>Scaphiopus hammondi</i>                   |
| Leopard frog— <i>Rana pipiens</i>           |   |
| Red-spotted toad— <i>Bufo punctatus</i>     |   |



*Looking from Heart of Rocks toward Sulphur Springs Valley  
and Doz Cabezas Peak.*

*The Duck in the Heart Of Rocks.*

