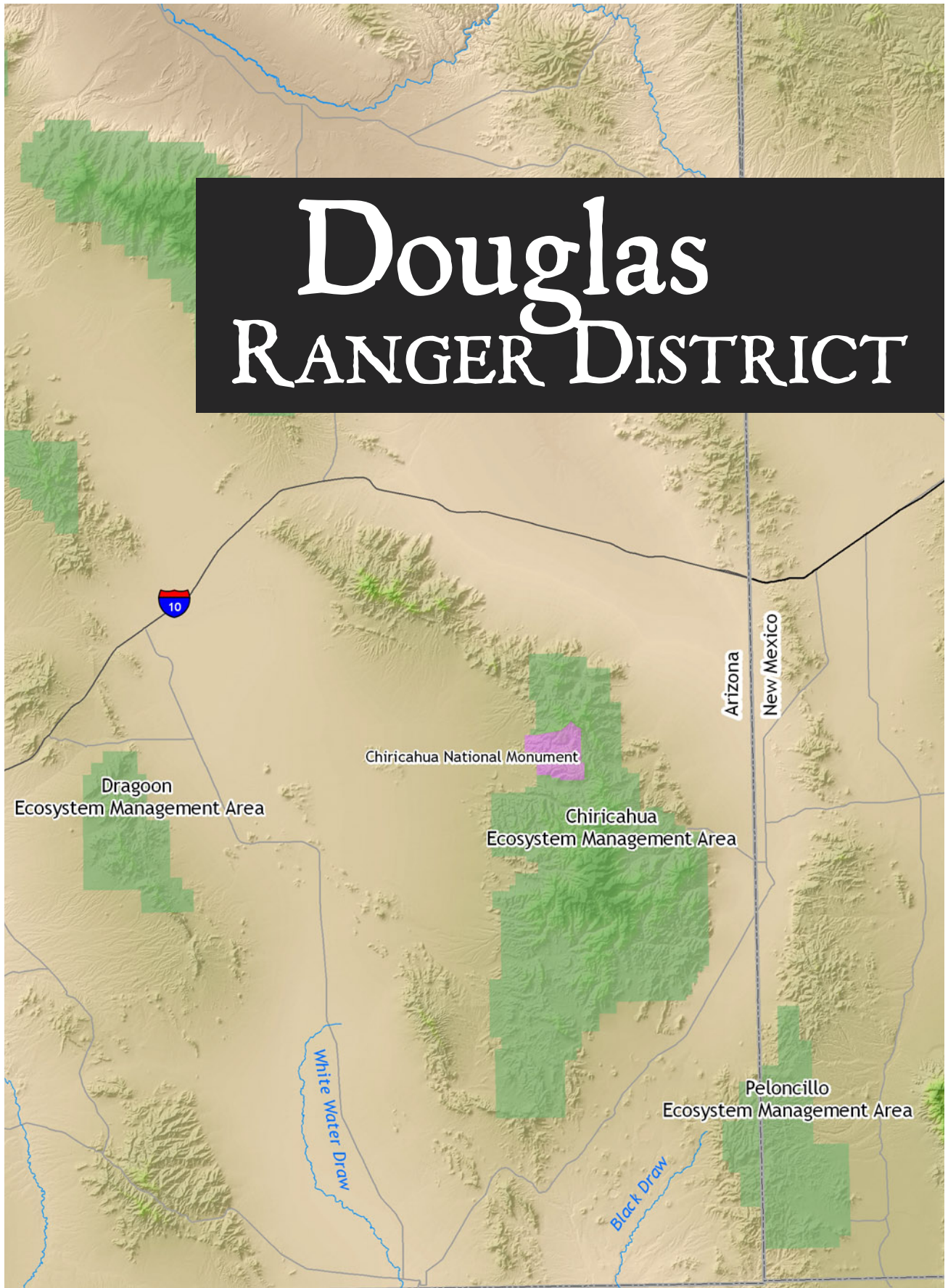


Douglas RANGER DISTRICT





CHAPTER 2 Chiricahua Ecosystem Management Area

The Chiricahua Mountain Range, located in the southeastern corner of the Coronado National Forest, is one of the largest Sky Islands in the U.S. portion of the Sky Island region. The range is approximately 40 miles long by 20 miles wide with elevations ranging from 4,400 to 9,759 feet at the summit of Chiricahua Peak. The Chiricahua Ecosystem Management Area (EMA) is the largest Management Area on the Forest encompassing 291,492 acres of the Chiricahua and Pedragosa Mountains.

Protected by remoteness, the Chiricahuas remain one of the less visited ranges on the Coronado National Forest. Formerly surrounded only by ranches, the effects of Arizona's explosive 21st century population growth are beginning to reach the flanks of the Chiricahuas.

San Simon Valley, located east of the mountains, has been experiencing construction of homes. Exurban growth is expected to continue in the San Simon Valley and the Portal area. Sulphur Springs Valley to the west is still largely farmland and an important wintering area for birds of prey, and for Sandhill Cranes in the state-managed Whitewater Draw Wildlife Area. Lands to the north and southeast are primarily a mixture of state, Federal and private lands. Chiricahua National Monument, known for its spectacularly eroded rhyolite rock formations, borders the northwest side of the Forest.

Natural History

The Chiricahua Mountains are known for their amazing variety of terrestrial plants, animals, and invertebrates. They contain exceptional examples of ecosystems that are rare in southern Arizona. While the range covers only 0.5% of the total land area in Arizona, it contains 30% of plant species found in Arizona, and almost 50% of all bird species that regularly occur in the United States.¹ The Chiricahuas form part of a chain of mountains spanning from central Mexico into southern Arizona. Because of their proximity to the Sierra Madre, they support a great diversity of wildlife found nowhere else in the United States such as the Mexican Chickadee, whose only known breeding locations in the country are in these mountains and the nearby Animas Mountains, and the Chiricahua fox squirrel. Apache and Chihuahua pines characteristic of the Sierra Madre grow on forested slopes, and birds such as Sulphur-Bellied Flycatchers, and Northern Buff-Breasted Flycatchers reach the northern edge of their range here. Buff-breasted flycatcher in Arizona nests almost entirely in the Chiricahuas and Huachucas, usually in pine-oak woodland, placing most of their breeding habitat under management of the Coronado National Forest. The Chiricahuas are one of the easiest places in southern Arizona to see the charismatic, subtropical Elegant Trogon.² Elegant Trogons nest in just a dozen or so sycamore-lined canyons in southern Arizona

where about 1,000 acres of suitable habitat exists.³ Some of these Canyons can be found along the eastern slopes of the Chiricahua range.⁴

The global importance of the Chiricahua Mountains to the birding community is recognized internationally by bird watching enthusiasts. More than 375 species of birds live in, or travel through the Chiricahua Mountain range. A 2008 Field Guides Newsletter refers to southeast Arizona as “the Number One Must-Go-To Spot in North America for birders.” The main reason for that assessment is the rich habitats for birdlife found primarily in the Chiricahuas, Huachucas and Santa Ritas. Examples of the rich bird life are numerous. A trip up Cave Creek Canyon on the northeast side of the range climbs through a study area in which the U.S.’s densest known raptor population occurs, including habitat of 11 different species of owls. A total of 24 species of birds of prey nest along the Canyon. A trip up Pinery Canyon on the west side of the range passes through the habitat of 10 different species of nightjars, and owls. Pine Canyon, a cliff lined drainage just south of Pinery Canyon, hosts nesting trogons along with a great variety of warblers.⁵ Pinery and Rucker Canyons in the early 1900s were once home to the now extirpated Thick-billed Parrots.⁶ Due to the excellent habitat found in the Chiricahuas, the mountain range was the site of Thick-billed Parrot reintroduction efforts in the 1980s. The only U.S. nesting of the Short-tailed Hawk outside of Florida was documented at the head of Pinery Canyon. The Peregrine Falcon, once nearly extirpated from the continental U.S. due to pesticide contamination, has recovered and the Chiricahuas are home to a population over 30 pairs, a testament to the abundant avian prey base found here.

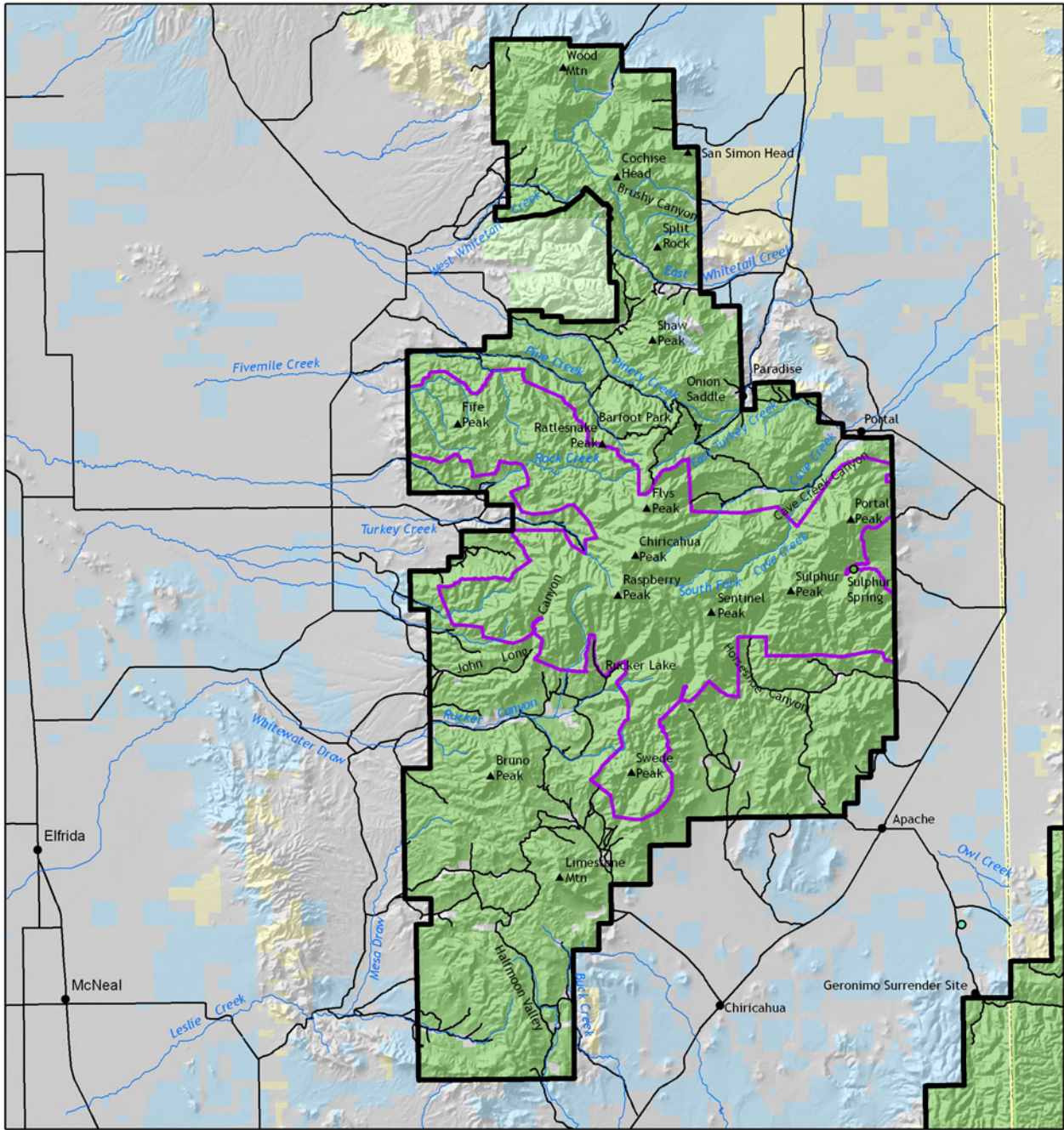
At least 14 territories of the Federally-threatened Mexican Spotted Owl have been identified in the Chiricahuas, along with a dozen territories of Apache Goshaw. Montezuma Quail thrives in the grasses in Madrean oak woodland habitat between 5,000 and 8,000 feet. In the past two decades, formerly rare Violet-crowned Hummingbirds and Buff-breasted Flycatchers have expanded into the Chiricahuas and are now regularly breed. Band-tailed Pigeons nest here and more arrive in flocks in early summer to feed on acorns in good mast years. Eared Quetzal and young of the year appear regularly in late summer and may be nesting in the high and inaccessible montane mixed conifer habitat at the head of Log Canyon, Price

Canyon, and South Fork. Flammulated Owl and Red-faced Warbler are regular breeders found in mixed conifer forests above about 6500’ in most or all the major drainages of the range.

The Mexican subspecies of several birds have a very limited distribution in the U.S., mostly in southeastern Arizona. Those breeding in the Chiricahuas include Whip-poor-will, Brown Creeper, and House Wren. Very rare tropical breeders (not reported in most years) include Crescent-chested warbler, Rufous-capped Warbler, and Flame-colored Tanager. Other species of tropical birds which occasionally appear here include Rufous-backed Robin, Aztec Thrush, Blue Mockingbird, Slate-throated Redstart, Yellow Grosbeak and Black-vented Oriole. The Chiricahuas are also home to multiple endemic species such as *Apacheria chiricahuensis*, a perennial plant first discovered in 1973 that flourishes exclusively on south-facing cliffs in the Chiricahuas.⁷ Healthy populations of mountain lion and black bear persist here and probably participate in regular genetic exchange with populations over the border in Mexico. Coati, Javelina and two species of deer occur in good numbers. In the past two decades, Jaguar have been sighted in the Peloncillos to the east, the Dragoons to the west and elsewhere along the U.S.-Mexico border.

The north end of the Chiricahua range is dominated by the landmark of “Cochise Head,” a mile-long monolith of sculpted rhyolite.⁸ Major drainages in the range include West Turkey Creek and Rucker Canyon on the western side, and Cave Creek Canyon on the eastern side. The small town of Portal sits at the mouth of Cave Creek Canyon, an area notable for stunning rock monoliths, beautiful scenery, and an amazing diversity of bird life.⁹ The American Museum of Natural History’s Southwestern Research Station is located a few miles up the Canyon. Founded in 1955 at the urging of scientist who were impressed with the invertebrate diversity in the Chiricahuas, The Research Station has since become one of the Nation’s most productive sites for invertebrate research. As of June 2006, over 1,100 scientific research papers have been published from work based out of the Research Station on a variety of species ranging from butterflies and ants, to lizards and snakes, to plants and birds.

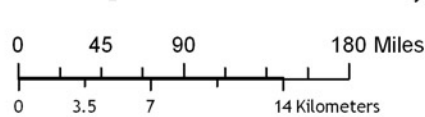
Vegetation types in the Chiricahua EMA range from semi-desert grasslands and Chihuahuan desert scrub (starting around 4,400 feet elevation) to



SKY ISLAND ALLIANCE
Protecting our Mountain Islands and Desert Seas



Ownership



- BLM
- Indian Lands
- NPS
- Private
- State Lands
- USFS
- Chiricahua EMA
- Chiricahua Wilderness
- Watercourses
- Roads

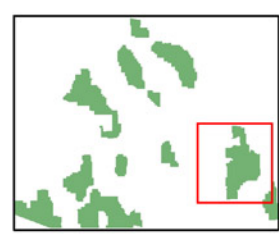


Figure 2.1 Overview of the Chiricahua EMA

montane mixed conifer forest at the highest elevations (8,500 to 9,759 feet).

Human Prehistory and History

The first solid archeological evidence of human habitation in this area shows Clovis hunters spearing mammoths in the San Pedro Valley — to the west of the Chiricahua EMA — by 9,000 B.C. Next came the long occupancy of the Cochise Culture of hunter-gatherers, eventual introduction of domesticated crop plants, and development of more densely settled networks of farming peoples.¹⁰ In these later times, the Chiricahua Mountains sat near the confluence of ranges for the Mogollon, Casas Grandes, and Hohokam peoples that populated the region, possibly as early as 200 A.D. and lasting in some form through the arrival of the Apache. Pottery pertaining to all of those cultures from the 1200s has been found on the surface of unexcavated sites at the mouths of Jhus, Sulphur, Cave Creek and Horseshoe Canyons.¹¹

History of extant cultures in the Chiricahua Mountains dates back to at least the 1500s when Europeans first made contact with the Apache in this region.¹² Boundaries of the Sky Island region coincide almost perfectly with the known range of the Chiricahua Apaches, with Chokonen (or Chiricahua), Bedonkohe, Chihenne, and Nedhni bands occupying various subdivisions of the region.¹³ The Chokonen ranged from the Huachuca and Whetstone Mountains east to the Animas Mountains, and from south of the Gila Valley to the Sierra Madre in Mexico. The Chiricahua Mountains were central in this range.

Written history of the area began with Coronado's 1540 journey from Mexico City to the Zuni area of New Mexico. One proposed route has this epic journey passing up the San Simon Valley east of the Chiricahua EMA to the Gila River, then north along the San Francisco River. Coronado was followed by a series of explorers from Spain and Spanish-ruled Mexico.¹⁴ Nevertheless, the resident Apaches managed to largely hold their own — first against the Spanish, then Mexican, and later U.S. armed forces and settlers — for the next 300-plus years.¹⁵

The word Chiricahua probably was probably derived from the Opata Indian word *chiguicagui*, which means “mountains of the wild turkeys”.¹⁶ The first recorded use of this name for the mountain range was from a Suma revolt in 1684, when a group of the rebellious natives reportedly took refuge in the Sierra de Cuchicagua, which was almost surely the present

day Chiricahua Mountains. In the 1770s, the Spaniards began to use *Chiricahua Apache* to designate a particular band of Apaches living in this range (the Chokonen).¹⁷ The Chiricahua Mountains and surrounding valleys provided refuge and resources for the Chokonen band of Apaches.

Well-known history of Apaches in the Chiricahua Mountains dates back to the mid-1800s when Cochise was the chief of the Chokonen band of Chiricahua Apaches. After decades of skirmishes with Mexican soldiers and settlers, 1858 marked Cochise's first peaceable interactions with newly-arriving white settlers and their military protectors. The peace ended in 1861, when soldiers captured and executed several of Cochise's relatives. This set off eleven years of violence between Anglos and Cochise's Apaches.¹⁸ During this time, Cochise and other Chokonen Apaches split time between the Dragoon, Chiricahua, and Peloncillo Mountains, as well as various sites south of the present-day U.S.-Mexico border.

In 1872 Brigadier General O. O. Howard, along with First Lieutenant J.A. Sladen, set out to make peace with Cochise. Guided by Thomas Jeffords (the only white man to befriend and become “blood brother” to Cochise), and later Chie (Cochise's nephew) and Ponce (Chie's brother-in-law and leader of a Chihenne band of Chiricahua Apache), they traced Cochise to his “stronghold” camp in the Dragoons. Making the long journey from Fort Tularosa in New Mexico, they were met on the west side of the Dragoons by members of Cochise's band, and led up a stream-filled gorge that, by Lt. Sladen's description, could only be Slavin Gulch. Several days of meetings in this basin and near West Stronghold Canyon, marked one of the greatest accomplishments in the region's history. On October 12, 1872, a peace treaty emerged between the white settlers and Cochise, a treaty which promised the Chiricahua Apache a reservation that included much of their original homeland and all of the Chiricahua Mountain Range, and which comprised much of current-day Cochise County (Figure 2.2).

The Chiricahua Reservation designation was rescinded by the U.S. Government in 1876. Abolishment of the reservation seems to have been related to several complex factors. Continued Apache raids in Sonora (some clearly based from the Chiricahua Reservation) strained U.S.-Mexico relations, and added fuel to the ongoing arguments of

Anglo Americans such as General George Crook that the U.S. Army should conquer and subjugate the Chiricahua Apaches.¹⁹ Across the west, the government had begun a policy of concentrating Indians on as few reservations as possible, to increase control over the Indians, to reduce the costs of managing reservations, and to free up lands for white settlers. Previous attempts to force all Chiricahua Apaches on reservations with either Western Apaches (distant relatives) or Mescalero Apaches (with whom they maintained closer relations) had failed, but many government officials still aimed for this type of consolidation. Cochise's unusually strong leadership skills had enabled him to negotiate effectively for his tribe's own reservation, in their traditional homeland, without subjection to U.S. military control. His consolidation of power then enabled him to maintain peaceful relations in the U.S. by controlling, to a large degree, raiding and warfare of other Apache bands on and around this reservation.

When Cochise died (June 8, 1874), some U.S. leaders saw weakening of centralized power as an opportunity to force relocation. They also found pretexts for this move — no subsequent leader was able to control the actions of a few errant individuals killing a nearby shopkeeper and his associate (who bore some responsibility for their own whisky-borne deaths) that triggered Army action. U.S. Indian agent John Philip Clum, head of the White Mountain/San Carlos Apache Reservation, spearheaded the push to dissolve the Chiricahua Reservation, and forcibly removed the Chiricahua Apaches in 1876. This eventually led to the breakout of many Chiricahua warriors and to the Army's long, frustrating endeavor to capture Geronimo. For the next ten years Geronimo led many raids in the region. Geronimo surrendered on September 6, 1886, in the nearby Peloncillo Mountains, ending centuries of warfare between Euro-Americans and the Apaches.

From the peace treaty of 1872 onwards, Anglo-American settlements expanded throughout the region. Bahre (1995) attributes this expansion to the interdependent forces of (1) successive subjugation of the Apaches, (2) the 1881 arrival of the railroad, (3) development of silver and copper mines in Tombstone

and Bisbee respectively, and (4) a boom in the cattle industry. The Chiricahuas were no exception to these trends. In the early 1880s, this cattle boom brought hundreds of thousands of cattle into Cochise County alone;²⁰ most of these were in the San Pedro and San Simon Valleys, west and east of the Chiricahuas.

Mining started in the Chiricahuas in the 1860s but up until the 1920s most ventures were short-term and failed. Apache Pass was the setting for the earliest mining claims which were primarily for gold. The California Mining District included claims at copper and lead-silver outcrops on the eastern side of the Chiricahuas along Turkey Creek and in Pinery Canyon. From around 1907 to 1918 the development and production of copper and lead continued near the town of Paradise on the eastern slopes of the Chiricahuas. At its peak in 1904 Paradise boasted a population of three hundred.²¹ Today 12 permanent

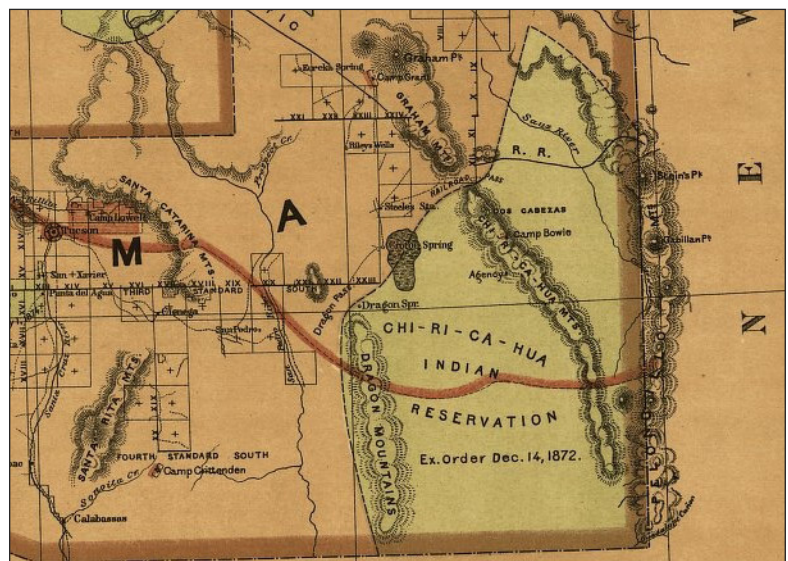


Figure 2.2 Chiricahua Indian Reservation

residents live in Paradise. The George Walker House, now a bed and breakfast and birding destination, is one of the few original structures standing in the town.

The Reed cabin at the Southwestern Research Station is now the residence of the station director. It dates to the first decade of the 20th century, and according to Ralph Morrow, Apaches at one time shot arrows into its heavy timber door. Geronimo and his group camped on the hill above the station when they came through. The Tombstone photographer Fly also had a potato field he tended in Fly Park, just off the Crest Trail.²²

There are three areas of Summer Recreation Residences in the Chiricahua EMA, in West Turkey Creek, Rustler Park, and Cave Creek. These cabins were built in the 1930s, are privately-owned structures

situated on Forest Service lands and are held under multi-decade leases. The Forest Service determines conditions of use and monitors compliance with their architectural and other regulations.

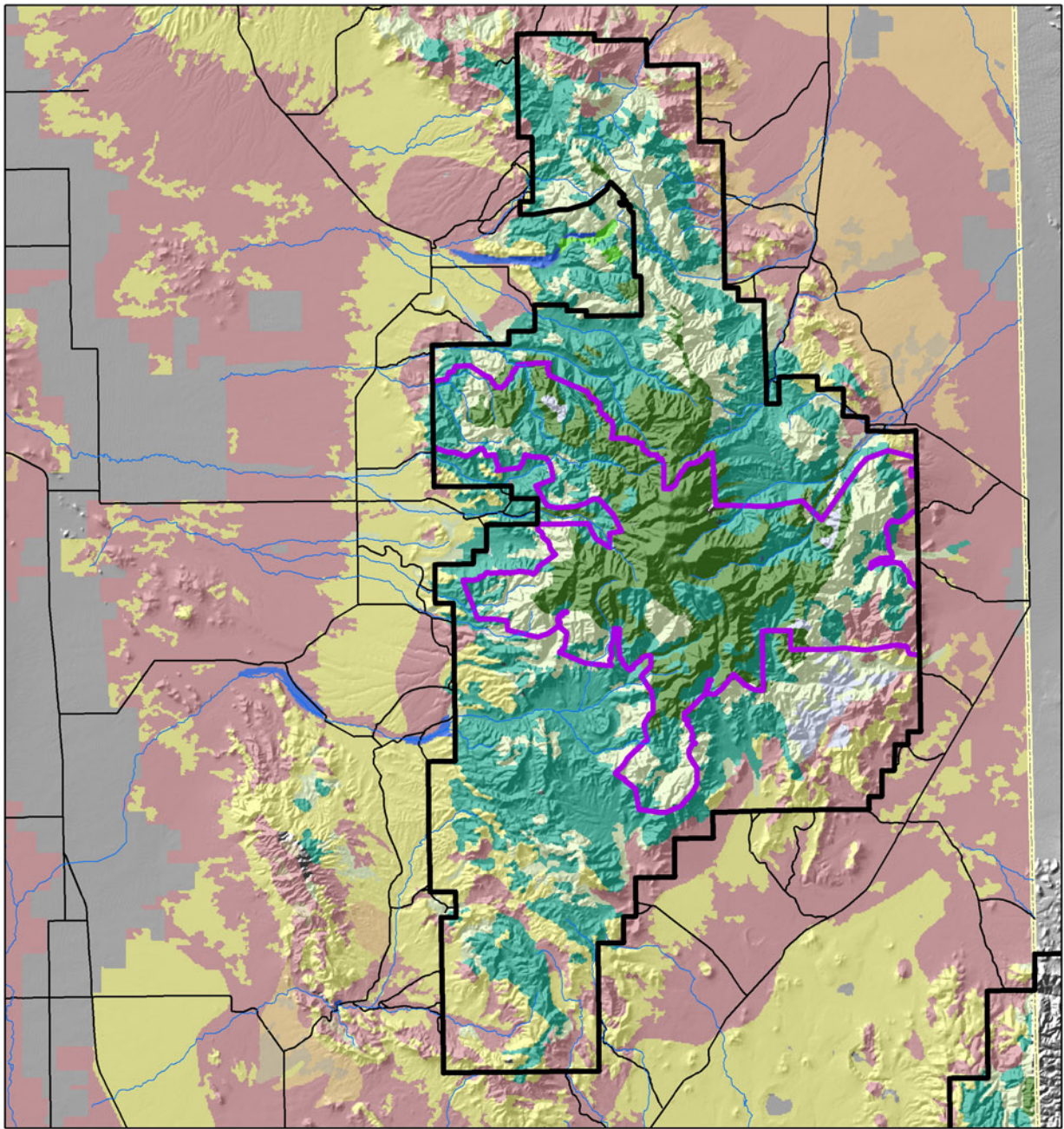
Elements of Biological Diversity and Cultural Heritage

The Chiricahua Ecosystem Management Area harbors a unique combination of vegetation types and species that contribute to the biological diversity of the Coronado National Forest. The Forest Service recognizes that building a framework for ecological sustainability will require management of entire biological communities combined with special management for particular species. For revision of the Forest Plan the Forest Service identified species that will be the focus of planning efforts. Species and vegetation types of management interest found across the Coronado National Forest were described and listed in the Forest Overview (Table 1.1, page 1-11). Described here are species and vegetation types specifically found on the Chiricahua Ecosystem Management Area. The Forest Service identified 48 species of plants and animals including four Threatened or Endangered Species, along with other species determined to be Species of Concern or Species of Interest due to guide management decisions (Table 2.1).

Ecological systems and the processes that sustain them are the foundations of native biological diversity. Vegetation communities and aquatic habitats that are especially species rich, diverse, or threatened; or are endemic to the region or locality are of particular management concern. To evaluate current conditions and management prescriptions for ecological systems the Forest Service is using the framework of Potential Natural Vegetation Types. Potential Natural Vegetation Types are defined as the vegetation that would dominate a site under natural disturbance regimes and biological processes. Using this classification allows current vegetation to be compared effectively to vegetation under historic conditions. Because Potential Natural Vegetation Types are relatively broad groupings, and because the Forest contains a high diversity of vegetation types, we present ecological systems as a focus for management direction. These ecological systems are cross-walked with the Potential

Natural Vegetation Types used by the Forest Service (Table 2.2). Although there are many fine variations in plant communities on the Chiricahua Ecosystem Management Area, ecological systems classify plant communities into broader groups so as to be most useful for management actions such as mapping, land management, and monitoring. Plant communities were grouped based on shared characteristics such as natural processes (e.g. fire and flood), substrates (e.g. shallow soils, limestone outcroppings), and local climate.²³ Figure 3 shows the distribution of ecological systems in the Chiricahuas. Through contact with regional scientists and experts, and other people familiar with the Chiricahuas, we identified ecological systems, physiographic features, additional species and cultural resources that should also be considered in the Forest Plan revision (Tables 2.2, 2.3, and 2.4).

Birds using the Chiricahuas fall into three broad categories: breeding species, migrants, and wintering species. While nesting species are of critical concern, migrants and wintering species also depend upon a healthy forest for their survival. Wintering birds will return to the same areas, and often to the exact winter territories, that have supported them in previous years. In the case of a declining species, the primary problems for the population can occur at any of these times: on the breeding grounds, in migration, or on the wintering grounds. The Chiricahuas and neighboring mountain ranges are renowned for their occurrence of a number of Mexican species whose range in the United States is quite limited. Most of them receive little protection in Mexico, and often an important part of their range in Arizona falls on the Coronado National Forest. Many of them are a vital underpinning of nature-based tourism, and therefore are important to the local economic stability of the Chiricahua region. Each year, major tour companies offer entire tours that focus on just one group of these birds including hummingbirds, owls, wintering sparrows, and other regional specialties, in addition to




 1:330,000

- | | | |
|---|--|---|
|  Chiricahua EMA |  Apachean Grassland and Savanna |  Montane Mixed-Conifer Forest |
|  Chiricahua Wilderness |  Apachean Shrubland |  Montane Riparian Woodland and Shrubland |
|  Watercourses |  Interior Chaparral |  Arizona Cypress |
| |  Madrean Encinal |  Chihuahuan Desert Scrub |
| |  Madrean Oak-Pine Woodland |  Desert Scrub |
| |  Pinyon-Juniper Woodland | |



0 45 90 180 Miles
 0 3.75 7.5 15 Kilometers

Figure 2.3 Ecological Systems of the Chiricahua EMA

Table 2.1 Species Identified by the Forest Service to Guide Management Decisions

| | | | |
|---|-----------------------------------|---|--|
| Amphibians | | Plants | |
| <i>Rana chiricahuensis</i> | Chiricahua Leopard Frog | <i>Acacia millefolia</i> | Milfoil Acacia |
| Birds | | <i>Allium rhizomatum</i> | Redflower Onion |
| <i>Ammodramus savannarum ammolegus</i> | Arizona Grasshopper Sparrow | <i>Apacheria chiricahuensis</i> | Cliff Brittlebush |
| <i>Cyrtonix montezumae</i> | Montezuma Quail | <i>Arabis tricornuta</i> | Rincon Mountain Rockcress |
| <i>Empidonax fulvifrons pygmaeus</i> | Northern Buff-breasted Flycatcher | <i>Arceuthobium blumeri</i> | Southwestern White Pine Dwarf-mistletoe |
| <i>Euptilotis neoxenus</i> | Eared Quetzal | <i>Asclepias lemmonii</i> | Lemmon Milkweed |
| <i>Falco femoralis septentrionalis</i> | Northern Aplomado Falcon | <i>Astragalus cobrensis</i> var. <i>maguirei</i> | Copper Mine Milk-vetch |
| <i>Meleagris gallopavo mexicana</i> | Gould's Turkey | <i>Bouteloua parryi</i> | Parry's Gramma |
| <i>Trogon elegans</i> | Elegant Trogon | <i>Brickellia lemmonii</i> var. <i>lemmonii</i> | Lemmon's Beggar-ticks |
| Fish | | <i>Brickellia simplex</i> | Sonoran Brickell-bush |
| <i>Agosia chrysogaster</i> | Longfin Dace | <i>Capsicum annuum</i> var. <i>glabriusculum</i> | Chiltepin |
| <i>Campostoma ornatum</i> | Mexican Stoneroller | <i>Carex ultra</i> | Cochise Sedge |
| <i>Gila purpurea</i> | Yaqui Chub | <i>Castilleja nervata</i> | Trans-Pecos Indian Paintbrush |
| Insects | | <i>Coursetia glabella</i> | Smooth Baby-bonnets |
| <i>Aeshna persephone</i> | Persephone's Darner | <i>Delphinium andesicola</i> | Chiricahua Mountains Larkspur |
| <i>Ameletus falsus</i> | False Ameletus Mayfly | <i>Delphinium scopulorum</i> | Rocky Mountain Larkspur |
| <i>Argia pima</i> | Pima Dancer | <i>Draba helleriana</i> var. <i>bifurcata</i> | Heller's Whitlow-grass |
| <i>Astylis biedermani</i> | A Notodontid Moth | <i>Draba standleyi</i> | Standley's Whitlow-grass |
| <i>Automeris patagoniensis</i> | Patagonia Eyed Silkmoth | <i>Erigeron arisolius</i> | Arid Throne Fleabane |
| <i>Chimarra primula</i> | A Caddisfly | <i>Erigeron kuschei</i> | Chiricahua Fleabane |
| <i>Chitrellina chiricahuae</i> | A Cave Obligate Pseudoscorpion | <i>Eriogonum arizonicum</i> | Arizona Wild-buckwheat |
| <i>Cicindela oregona maricopa</i> | Maricopa Tiger Beetle | <i>Escobaria orcuttii</i> | Orcutt's Foxtail Cactus |
| <i>Cloeodes peninsulus</i> | A Mayfly | <i>Escobaria vivipara</i> var. <i>bisbeeana</i> | Bisbee's Pincushion Cactus |
| <i>Oligocentria delicata</i> | A Notodontid Moth | <i>Fraxinus papillosa</i> | Chihuahua Ash |
| <i>Piruna polingii</i> | A Notodontid Moth | <i>Gentianella wislizeni</i> | Chiricahua Gentian |
| <i>Psephenus arizonensis</i> | Four-spotted Skipperling | <i>Hackelia ursina</i> | Chihuahuan Stickseed |
| <i>Stygobromus arizonensis</i> | Arizona Water Penny Beetle | <i>Hedeoma costatum</i> | Chiricahua Mock Pennyroyal |
| <i>Sympetrum signiferum</i> | Arizona Cave Amphipod | <i>Heuchera glomerulata</i> | Chiricahua Mountain Alumroot |
| Mammals | | <i>Hexalectris spicata</i> var. <i>arizonica</i> | Crested Coralroot |
| <i>Canis lupus baileyi</i> | Mexican Gray Wolf | <i>Hexalectris warnockii</i> | Purple-spike Coralroot |
| <i>Choeronycteris mexicana</i> | Mexican Long-tongued Bat | <i>Hieracium rusbyi</i> | Rusby's Hawkweed |
| <i>Idionycteris phyllotis</i> | Allen's Big-eared Bat | <i>Hymenoxys quinquesquamata</i> | Rincon Bitterweed |
| <i>Lasiurus blossevillii</i> | Western Red Bat | <i>Ipomoea plummerae</i> var. <i>cuneifolia</i> | Huachuca Mountain Morning-glory |
| <i>Nyctinomops macrotus</i> | Big Free-tailed Bat | <i>Ipomoea tenuiloba</i> var. <i>lemmonii</i> | Lemmon's Morning-glory |
| <i>Panthera onca</i> | Jaguar | <i>Ipomoea thurberi</i> | Thurber's Morning-glory |
| <i>Sciurus nayaritensis chiricahuae</i> | Chiricahua [Fox] Squirrel | <i>Lilium parryi</i> | Lemon Lily |
| <i>Sorex arizonae</i> | Arizona Shrew | <i>Limosella pubiflora</i> | Chiricahua Mudwort |
| Mollusks | | <i>Lupinus huachucanus</i> | Huachuca Mountain Lupine |
| <i>Ashmunella chiricahuana</i> | Cave Creek Woodlandsnail | <i>Lupinus neomexicanus</i> | New Mexico Lupine |
| <i>Gastrocopta prototypus</i> | Sonoran Snaggletooth | <i>Macromeria viridiflora</i> var. <i>thurberi</i> | Giant-trumpets |
| <i>Holospira ferrissi</i> | Stocky Holospira | <i>Macromeria viridiflora</i> var. <i>viridiflora</i> | Giant-trumpets |
| <i>Oreohelix barbata</i> | Bearded Mountainsnail | <i>Mammillaria grahamii</i> var. <i>oliviae</i> | |
| <i>Radiocentrum chiricahuana</i> | Chiricahua Mountainsnail | <i>Mammillaria wrightii</i> var. <i>wrightii</i> | Wright Fishhook Cactus |
| <i>Sonorella virilis</i> | Chiricahua Talussnail | <i>Margaranthus solanaceus</i> | Netted Globeberry |
| | | <i>Perityle cochisensis</i> | Cochise Rock Daisy |
| | | <i>Perityle dissecta</i> | Slimlobe Rockdaisy |
| | | <i>Phaseolus supinus</i> | Supine Bean |

continued

tours that focus on the general southwestern avifauna. Nesting bird species that particularly deserve inclusion in the planning process are listed below along with some migrants and wintering species. The plight of neotropical migrants has long aroused concern among conservation biologists. The Chiricahua Mountains provide an important migration stopover for many species, including some whose populations are in strong decline. A huge number of hummingbirds funnel through the mountain ranges of southeastern Arizona and southwestern New Mexico, especially in fall, feeding on flowering agaves and other blooms as they migrate.²⁴

Species that will need special management attention include species that are endemic to the region or locality, species that have a restricted distribution within the region, and species dependent on specialized habitat. Other species that will need special consideration are species that are rare, vulnerable or declining throughout their ranges; are rare, imperiled or vulnerable in the U.S. portion of their ranges that overlap the Coronado National Forest; or are harvested for economic interests. These species may not be adequately protected by

Table 2.1 Species Identified by the Forest Service to Guide Management Decisions *continued*

| | |
|---|-------------------------------|
| <i>Phoradendron bolleanum</i> ssp. <i>pauciflorum</i> | Rough Mistletoe |
| <i>Pinaropappus roseus</i> var. <i>foliosus</i> | |
| <i>Plagiobothrys pringlei</i> | Pringle's Popcorn-flower |
| <i>Polemonium pauciflorum</i> <i>hinckleyi</i> | Hinkley's Jacob's Ladder |
| <i>Potentilla thurberi</i> var. <i>thurberi</i> | Thurber's Cinquefoil |
| <i>Ranunculus hydrocharoides</i> var. <i>stolonifer</i> | Frog's-bit Buttercup |
| <i>Rhamnus crocea</i> ssp. <i>pilosa</i> | Redberry Buckthorn |
| <i>Roldana hartwegii</i> | Seemann (Hartweg's) Groundsel |
| <i>Rumex orthoneurus</i> | Blumer's Dock |
| <i>Samolus vagans</i> | Chiricahua Mountain Brookweed |
| <i>Scutellaria tessellata</i> | Huachuca Mountains Skullcap |
| <i>Senecio huachucanus</i> | Huachuca Groundsel |
| <i>Sisyrinchium arizonicum</i> | Arizona Blue-eyed-grass |
| <i>Sisyrinchium cernuum</i> | Nodding Blue-eyed Grass |
| <i>Sisyrinchium longipes</i> | Timberland Blue-eye-grass |
| <i>Stellaria porsildii</i> | Porsild's Starwort |
| <i>Woodsia cochisensis</i> | Cochise Woodsia |
| <i>Woodsia phillipsii</i> | Phillips' Cliff Fern |
| Reptiles | |
| <i>Crotalus pricei</i> | Twin-spotted Rattlesnake |
| <i>Sceloporus slevini</i> | Slevin's Bunchgrass Lizard |
| <i>Tantilla yaquia</i> | Yaqui Black-headed Snake |

Table 2.2 Foundations of Native Biological Diversity

| |
|--|
| "Potential Natural Vegetation Types" (bold) as they correspond with The Nature Conservancy's "Ecological Systems" |
| Interior Chaparral Interior Chaparral |
| Madrean Encinal Woodland Madrean Encinal |
| Madrean Pine-Oak Woodland Madrean Pine-Oak Woodland |
| Mixed Broadleaf Deciduous Riparian Forest Riparian Woodland and Shrubland |
| Mixed Conifer Forest Montane Mixed-Conifer Forest |
| Piñon-Juniper Woodland Piñon-Juniper Woodland |
| Semi-desert Grasslands Apachean Grassland and Savannah Apachean Shrubland |
| Wetland/Cienega Cienega |
| Physiographic Features |
| Limestone outcroppings |
| Springs |
| Abundant cliffs — offering structural diversity and thermal shelter for nesting birds of prey including Mexican Spotted Owl, Peregrine Falcon and Golden Eagle. |
| Barfoot Lookout — a prime raptor-migration viewing lookout |
| Crystal Cave — a vast system of passages and chambers, and is a popular spelunking destination as well as a breeding cave for endangered bats |
| Unnamed Cave — high on the north flank of South Fork is regularly used in summer by millions of Mexican Free-tailed Bats (possibly the males from Carlsbad) |

Table 2.3 Additional Species that Require Special Management Consideration

| | | | |
|----------------------------------|--|---|-------------------------------------|
| Amphibians | | <i>Vermivora virginiae</i> | Virginia's Warbler |
| <i>Rana blairi</i> | Plains Leopard Frog | <i>Vireo bellii arizonae</i> | Arizona Bell's Vireo |
| <i>Rana yavapaiensis</i> | Lowland Leopard Frog | Birds: Neotropical Migrants | |
| Birds: Breeding | | <i>Buteogallus anthracinus</i> | Common Black-Hawk |
| <i>Aeronautes saxatalis</i> | White-throated Swift | <i>Empidonax wrightii</i> | Gray Flycatcher |
| <i>Amazilia beryllina</i> | Berylline Hummingbird | <i>Peucedramus taeniatus</i> | Olive Warbler |
| <i>Amazilia violiceps</i> | Violet-crowned Hummingbird | Birds: Wintering | |
| <i>Aquila chrysaetos</i> | Golden Eagle | <i>Sphyrapicus thyroideus</i> | Williamson's Sapsucker |
| <i>Asturina nitida maxima</i> | Northern Gray Hawk | Insects | |
| <i>Buteo albonotatus</i> | Zone-Tailed Hawk | <i>Abedus herberti</i> | Giant Water Bug |
| <i>Bueo brachyurus</i> | Short-tailed Hawk | Mammals | |
| <i>Calothorax lucifer</i> | Lucifer Hummingbird | <i>Corynorhinus townsendii pallescens</i> | Pale Lump-nosed Bat |
| <i>Campostoma imberbe</i> | Northern Beardless-Tyrannulet | <i>Myotis ciliolabrum</i> | Western Small-Footed Myotis Bat |
| <i>Cardellina rubrifrons</i> | Red-faced Warbler | <i>Myotis thysanodes</i> | Fringed Myotis Bat |
| <i>Coccyzus americanus</i> | Yellow-billed Cuckoo | <i>Myotis velifer</i> | Cave Myotis Bat |
| <i>Cyanthus latirostris</i> | Broad-billed Hummingbird | <i>Myotis volans</i> | Long-legged Myotis |
| <i>Dendroica graciae</i> | Grace's Warbler | <i>Thomomys umbrinus</i> | Southern Pocket Gopher |
| <i>Dendroica nigrescens</i> | Black-throated Gray Warbler | Plants | |
| <i>Eugenes fulgens</i> | Magnificent Hummingbird | <i>Hymenoxys ambigens</i> var. <i>ambigens</i> | Pinaleño Mountains Rubberweed |
| <i>Falco mexicanus</i> | Prairie Falcon | <i>Lilaeopsis schaffneriana</i> var. <i>recurva</i> | Affloter |
| <i>Junco phaeonotus</i> | Yellow-eyed Junco | <i>Lupinus lemmonii</i> | Lemmon's Lupine |
| <i>Lampornis clemenciae</i> | Blue-Throated Hummingbird | <i>Penstemon superbus</i> | Superb Beardtongue |
| <i>Otus flammeolus</i> | Flammulated Owl | <i>Physalis latiphysa</i> | Broadleaf Ground Cherry |
| <i>Otus trichopsis</i> | Whiskered Screech-Owl | <i>Senecio neomexicanus</i> var. <i>toumeyi</i> | Toumey Groundsel |
| <i>Picoides stricklandi</i> | Arizona Woodpecker | <i>Spiranthes delitescens</i> | Canelo Hills Ladies' Tresses Orchid |
| <i>Poecile sclateri</i> | Mexican Chickadee | <i>Talinum marginatum</i> | Tepic Flame Flower |
| <i>Polioptila nigriceps</i> | Black-capped Gnatcatcher | <i>Vauquelinia californica</i> ssp. <i>pauciflora</i> | Arizona Limestone Rosewood |
| <i>Progne subis</i> | Purple Martin | Reptiles | |
| <i>Rhynchopsitta pachyrhynca</i> | Thick-billed Parrot | <i>Phrynosoma cornutum</i> | Texas Horned Lizard |
| <i>Sialia mexicana</i> | Western Bluebird | <i>Sceloporus virgatus</i> | Striped Plateau Lizard |
| <i>Sialia sialis fulva</i> | Eastern Bluebird (Azure Bluebird subspecies) | <i>Senticolus triaspis</i> | Green Ratsnake |
| <i>Spizella atrogularis</i> | Black-chinned Sparrow | <i>Sistrurus catenatus edwardsii</i> | Desert Massasauga |
| <i>Falco mexicana</i> | Prairie Falcon | <i>Thamnophis eques megalops</i> | Mexican Gartersnake |
| <i>Toxostoma crissale</i> | Crissal Thrasher | | |
| <i>Vermivora luciae</i> | Lucy's Warbler | | |

managing for ecological systems and may require specific management actions or monitoring. Table 2.3 lists additional species whose needs should be assessed during plan revision.

The Chiricahua Mountains contain a wealth of prehistoric and historic influences. Visible and physical remnants of previous human habitation of the area include built structures, physical sites, or objects or assemblages of material culture. Human uses of the land compatible with the protection of biological diversity are also an important part of the Cultural Heritage of the area (Table 2.4).

Table 2.4 Elements of Cultural Heritage

| | |
|--|--|
| Human History | |
| Summer Recreation Residences | |
| Cima Cabin | |
| Rustler Park FS Structures | |
| Portal Ranger Station | |
| Reed Cabin | |
| Ralph Morrow's two houses in Whitetail | |
| Fire Lookouts | |
| Other Values | |
| Opportunities for quiet and solitude | |
| Opportunities for primitive recreation | |

Desired Conditions

Management Vision

The Chiricahua Ecosystem Management Area retains its long-term biological, cultural, historical, recreational, and aesthetic values in the face of changing human use and dynamic ecological cycles. It is managed for its biodiversity and for human recreation that depend on this — birding, wildlife viewing, wildlife photography, wilderness hiking and camping.

- ★ The Chiricahua EMA is managed in full recognition and support of its extraordinary biodiversity and wildlife values.
- ★ The Chiricahua EMA remains situated in a landscape in which wide-ranging species (black bear, mountain lion, deer, pronghorn, Mexican gray wolf, jaguar, coati, and others) are able to move between the Chiricahua EMA and the following: Dragoon and Peloncillo EMAs, Peloncillo and Dos Cabeza Mountain Ranges, and wildlands to the south in Mexico.
- ★ Development around the Chiricahua EMA does not prevent the continued use of prescribed fire and wildland fire as management tools.
- ★ Cave Creek Canyon is managed to protect its unique birding opportunities.
- ★ Bird species are managed at the population level.
- ★ The West Turkey Creek Campground is maintained at current size or smaller. Problems at John Hands and other campgrounds are addressed. Impacts associated with undeveloped, dispersed camping are managed and minimized.

- ★ Destruction of riparian habitat due to poorly managed livestock grazing in Cave Creek Canyon is prevented.
- ★ Scenic resources, including geological features and viewsheds, do not lose value from their current classifications.
- ★ The Cave Creek Bird of Prey Zoological Area is established and managed primarily for sustaining and enhancing the populations of raptors and is managed for research and birding visitors.
- ★ The Forest Visitor Center is reopened and staffed with knowledgeable personnel who can effectively communicate an appreciation of the Chiricahua's values and ecosystems.
- ★ All necessary Forest infrastructure — including the trail system, trailheads and campgrounds — is maintained so as to enhance visitor enjoyment, while remaining compatible with conservation goals.
- ★ Important historical and cultural areas accurately reflect conditions during the area's historical heyday in the mid to late 1800s.
- ★ Shrub encroachment is monitored via repeat photography using points originally photographed as early as 1883, while adding a new set of representative photo points. Shrub encroachment in some areas is actively managed with a combination of fire and manual or mechanical thinning. Grassland restoration work conducted at the Fort Bowie National Historic Site provides precedence and experience-based recommendations for safe, effective, small-scale grassland restoration in historically important sites.

Conservation Assets

Conservation assets work on behalf of desired conditions and against the threats to the ecological and cultural elements of the Chiricahua EMA. They will contribute to the Forest Service's ability to maintain ecological sustainability on the Management Area. Several organizations and protective measures already in place in the Chiricahua EMA support our vision for the region's conservation. The following emerged as major assets for conservation on the Chiricahua Ecosystem Management Area.

American Museum of Natural History's Southwestern Research Station

American Museum of Natural History has conducted research on the flora and fauna of the Chiricahua Mountains since its founding in 1955. The Research Station attracts scientists and advanced students from all parts of the country and from abroad to carry out research projects. Fields of interest include entomology, herpetology, ornithology, mammalogy, botany, geology, arachnology, animal behavior and population, and behavioral and physiological ecology. The depth of scientific study occurring in the area highlights the ecological importance of the Chiricahua EMA.

Cave Creek Protection Act of 1993

This act withdrew all Federal lands in the Cave and Silver Creek drainages from mineral entry.

Chiricahua Regional Council

The Council is a citizens' watchdog group that monitors public agency and other actions affecting the Chiricahua Mountains and nearby areas of southeastern Arizona, southwestern New Mexico, and adjacent northern Mexico. This nonprofit group was originally formed in response to a gold mine that was proposed in the Chiricahuas in 1992. That effort culminated in the voluntary withdrawal of the mining company and in national legislation protecting the Cave Creek Canyon area from further threats from mining. The Council continues to work on issues affecting the Chiricahua EMA and has focused advocacy work on maintaining healthy, intact habitats throughout the Chiricahuas and disseminating information about potential threats to the region, as

those threats arise. It advocates careful land stewardship and seeks to educate the public, as needed, on any aspect of natural history, conservation and land use including sound grazing practices. The Regional Council spent a year monitoring the use of campgrounds in Cave Creek Canyon, in order to evaluate the need for an additional large campground proposed by the Forest Service. A major strength of the organization lies in its broad constituency. Its membership includes biologists, ranchers, birders, residents, visitors, and other segments of the general public, and several of these interests are represented on its board of directors.

Chiricahua Important Bird Area

This area encompasses the Chiricahua mountain range extending from 5,000 feet elevation where grassland and oaks meet, up to 9,759 feet at the top of Chiricahua Peak. This area is host to 375 species of birds. Of greatest ornithological importance are the many Mexican species whose northern summer breeding range extends into these mountains. The IBA also supports 15 species of hummingbirds, and 33 Species with Conservation Status.

El Coronado Ranch

Josiah and Valer Austin, owners of El Coronado Ranch, have pioneered methods of restoring watersheds and improving ecosystem health, within the context of a ranching operation.

International Recognition

The international birding community recognizes the global importance of Cave Creek Canyon and Rustler Park area to birders and related commercial interests.

Portal-Rodeo Community

Special Interest Areas

Our conservation efforts are helped by the special designations already in place for several areas of the Chiricahua EMA including Chiricahua Wilderness Area, South Fork Zoological and Botanical Area, and Pole Bridge Canyon Research Natural area. These are treated in more detail in the Wilderness and Special Management Area sections.

Threats to the Forest: A Need for Change

The Coronado National Forest and surrounding lands have experienced a variety of changes in the twenty years since the current Forest Plan was written. Management concerns and threats exist in the Chiricahuas that are not addressed in the Forest Plan, or have not been adequately dealt through management. The new Forest Management Plan will update existing management direction and add new management direction, both of which should address these concerns. The following issues present challenges to ecological sustainability on the Chiricahua Ecosystem Management Area.

ADJACENT LAND USES

The community of Portal Arizona on the east side of the Chiricahua EMA continues to grow. Portal is located on the edge of Cave Creek Canyon, a well-recognized scenic and wildlife resource on the Forest. Continued development in the area will lead to increased visitor use on the east side of the EMA and will change the natural character of the lands bordering the Forest. It may also hinder the movement of wildlife between the Chiricahua and Peloncillo Mountains. Future exurban and/or road development in the valleys surrounding the Chiricahua EMA will disrupt wildlife linkages that allow wildlife to move between the Chiricahuas and surrounding EMAs and wildlands. It would also be expected to increase vehicular traffic to the area leading to increased wildlife mortality. Especially impacted will be golden eagle, turkey vulture, Montezuma quail, snakes and other reptiles that seek warmth on pavement, and large mammals such as coyote, deer, fox, mountain lion, black bear, coati and bobcat.

Other resources likely affected include: springs, ephemeral watercourses, seeps, scenic resources, all ecological systems, all native vegetation types and their associated flora and fauna; species particularly sensitive to direct human disturbance (e.g., bats, lizards, desert box turtle).

ECOLOGICAL RESTORATION

Years of suppression of natural fire regimes in vegetation types adapted to regular fire has created areas with heavy fuel loads. These areas are susceptible to catastrophic fire from both natural and man-made

starts. Threats include drought exacerbated by human activity; high-intensity stand-replacing fires due to higher fuel loads; and changes in natural watershed function/ flow regimes. Resources affected by alteration of large-scale ecological processes include all native ecological systems and their associated species.

EXTRACTIVE USES

Commercial/cultural collection of plants and non-game animals leads to a depletion of species populations, degradation of habitat, and the depletion of habitat. Surrounding habitat is degraded by vehicles driving off-road to reach desired plant and animal species. Species affected by collection include the Arizona mountain kingsnake, green ratsnake, and twin-spotted rattlesnake.

Cutting or removal of snags, dead trees, and branches containing nesting cavities, or suitable for nesting cavities threatens a variety of bird species in the area. This decreases essential habitat for Whiskered Screech Owl, Western Screech Owl, Elf Owl, Flammulated Owl, Northern Sawwhet Owl, Northern Pygmy Owl, Thick-billed Parrot, Elegant Trogon, Eared Quetzal, Dusky-capped Flycatcher, Brown-crested Flycatcher Sulphur-bellied Flycatcher, Purple Martin, Mexican Chickadee, House Wren, Eastern Bluebird, Western Bluebird and Lucy's Warbler along with Clark's Spiny Lizard, and several species of snakes and bats.²⁵ Known nesting sites of Elf Owl, Whiskered Owl, Strickland's Woodpecker and bats have been removed for hazard-tree reduction near campgrounds and high human-use areas. Live-tree fuelwood cutting has been largely stopped and it should not resume. Unfortunately, wood collectors continue to routinely push over standing dead snags for harvest. These snags may contain active or potential nesting cavities and this activity reduces suitable habitat for bird species that are sought by bird watchers visiting the Forest. Living oak forests in lower Horseshoe and other canyons were decimated by this use in the 1970s. Dead and down permit issuance should be carefully monitored for compliance.

Livestock Grazing

Poorly managed livestock grazing has resulted in damage to sensitive canyon and riparian habitat, along with damage to the trail system in the Chiricahua

EMA. This was particularly a problem in the winter and spring of 2006-2007 in the Cave Creek Canyon area of the Chiricahua EMA. Damaged and downed fences, and other problems allowed cattle to enter areas where they were not allowed to be. No livestock grazing should be allowed to occur in these areas until fences are properly fixed and maintained. There has also been a lack of grazing oversight. Grazing in the Cave Creek area is supposed to occur only during the winter but recently cattle have been present year-round. Resources affected by poorly managed livestock grazing include: riparian-associated species, Coppermine Milkvetch (*Astragalus cobrensis maguirei*), Cochise sedge (*Carex ultra*), ecological systems historically maintained by low-intensity, regular fires,²⁶ and birds that depend on grass, forb and shrub cover for nesting and forage, and to escape predators (including Montezuma and Scaled Quail, all hummingbirds — for nectar sources, Bell's Vireo, Black-capped Gnatcatcher, Crissal Thrasher, Virginia's Warbler, Abert's Towhee, Black-chinned Sparrow, Yellow-eyed Junco, and numerous neotropical migrants like MacGillivray's Warbler).

INVASIVE SPECIES

Invasive plant species in the Management Area include Horehound, Tree of Life, Vinca, Chinese Elm, Russian Thistle and Boer's Lovegrass. These plants compete with native species and change the vegetative composition of ecological systems on the EMA.

NON-EXTRACTIVE USES

Ultralight aircraft overflights on the Chiricahua EMA, including through airspace above designated Wilderness, and a Zoological and Botanical Area, are increasing in frequency. The construction of a kite wing aircraft flight training center (Southwest Aerotrekking Academy) is occurring in Willcox and Rodeo. The center utilizes the Chiricahuas for flight training including over 50 mapped routes through mountains and surrounding areas. An ultralight flying club is also based out of the training center in Rodeo.²⁷ Overflights create noise pollution and are potentially disruptive to the breeding behaviors of birds in canyons, especially during early morning and evening time in summer months. They are also disruptive to Forest visitors seeking quiet and solitude, or engaging in quiet recreation activities like hiking and birding. These flights create the threat of ignition of wildfires at unnatural times of the year in areas with potentially high fuel loads. In addition to ultralights, locally-

based light aircraft are increasing in number due to developments like Rancho del Cielo. Birding is based almost equally on hearing as well as sight, and a management plan for the EMA should include the control of man-made acoustic disturbance.

Affected are: vegetation types with unnatural fuel loading due to historical fire suppression; animal species especially sensitive to direct human disturbance (e.g., avian species that use canyon habitat); Mexican Spotted Owl, Golden Eagle, Apache Goshawk; opportunities for quiet and solitude.

Paintball activities

The Chiricahua EMA has previously been the proposed site for paintball tournaments and is becoming and increasingly popular location for recreational paintball activities. Paintball activities are incompatible with the arid climate and extraordinary wildlife values of the Chiricahuas. Impacts include:

- ★ Defacement of natural structures and vegetation
- ★ Pollution from paint and capsules in a low-rainfall region where degradation of residues would be slow to non-existent
- ★ Accumulation of litter
- ★ Damage to natural and cultural resources due to ground-disturbing activity
- ★ Increased danger of uncontrollable wildfire and wildfire during unnatural times of the year
- ★ Disturbance to nesting birds

Affected are all physiographic features, all ecological systems and their associated flora and fauna, vegetation types with unnatural fuel loading due to historical fire suppression, species especially sensitive to direct human disturbance, and prehistoric and historical sites, structures, and artifacts

Visitor Management

Degradation of habitat has been occurring at popular undeveloped camping spots, especially in riparian habitat. Many trails in the range have fallen into severe disrepair and are very difficult to follow creating hazards for hiker and other trail users. There is a distinct lack of Forest Service personnel for enforcement of laws, interaction with visitors and public education in the Chiricahua EMA. The Forest Service Visitor Center at the entrance to Cave Creek Canyon has been closed and therefore no longer offers

an important point of contact between the Forest Service and the public.

ROADS AND TRANSPORTATION SYSTEM

Current motorized use of the EMA is growing. Threats from motorized use of the Chiricahua EMA include existing non-system roads, creation of new non-system road, lack of enforcement of the legal transportation system, and disruption of quiet recreation.

U.S.-MEXICO BORDER

The Chiricahuas experience foot traffic from human immigrants along with people smuggling humans and goods across the U.S.-Mexico border. Threats include the creation of walls or other structures to impede human movement across the border, creation of new roads by border enforcement activities, and shifts in cross-border traffic due to changes in border enforcement.

OTHER THREATS

John Long Canyon

Formerly the only major drainage not accessible to the public by vehicle, Arizona Game and Fish and the Douglas Ranger District opened it to travel as far as a locked gate in the upper canyon.

Barfoot Campground

Barfoot campground is a popular site for the poaching of twin spotted rattlesnakes.

California Mining District

Mineral occurrences have been documented at mines and prospects throughout the northern part of the Forest in the California Mining District.²⁸

East Side

In oak, juniper and pine woodland on the east side of the Chiricahua mountain range grows *Astylis biedermani* which is susceptible to inadvertent management actions that are detrimental to the plant. This plant is threatened by previous lack of consideration in the Forest Plan.²⁹

Lower Pinery Canyon

Lower Pinery Canyon is being heavily used by dispersed campers. Many of these are overflow campers from Coronado National Monument. At peak season in March and April Coronado National Monument personnel direct campers here.

Cave Creek Canyon

Additional canyon bottom habitat goes under pavement every few years due to road realignment and campground expansion. This trend should stop. Hazard tree reduction in high use area should be done after consultation with local biologists to avoid the destruction of active nest cavities, reptile shelter holes and bat roosts.

Recommended Objectives and Management Actions

The Chiricahua Ecosystem Management Area encompasses some of the most biologically diverse habitat on the Coronado National Forest, is nationally known for its invertebrate diversity, and is internationally known for its birding opportunities and biological research. The area supports a variety of human recreation that depend on the renowned biological distinctiveness of the area — birding, wildlife viewing, wildlife photography, wilderness hiking and camping. The range still offers outstanding opportunities for primitive recreation where quiet and solitude can be experienced. All of these distinctive

aspects of the Chiricahuas should be the major focus of future management direction for the area. New management direction that shows foresight and proactively addresses threats will create a long-term framework for ecological health and sustainability in the Chiricahuas. To confront threats and capitalize on conservation assets, we recommend the following objectives and management actions to be incorporated into the new Coronado National Forest Management Plan and subsequent project level activities.

Adjacent Land Uses

Objectives

Maintain wildlife corridors between the Chiricahua EMA and (1) the Dragoon EMA, (2) the Peloncillo EMA, (3) the rest of the Peloncillo Mountain range, (4) the Dos Cabezas Mountain range, and other surrounding natural areas.

Actions

Encourage and appreciate good stewardship among private landowners on holdings adjacent to the Forest.

Work with state and county transportation departments (Arizona, New Mexico, Cochise and Hidalgo County) to adopt ecologically sensitive road design and to retrofit existing highways to ensure connectivity.

Ecological Restoration

Objectives

Restore the assemblage of species common in the Chiricahua Mountains before the arrival of the railroads and urbanization (acknowledging that climate change will affect the potential for such restoration).

Manage habitat for all wild, native species so that they persist over large scales of time and space.

Restore natural disturbance regimes to promote naturally functioning ecosystem processes.

Restore and maintain natural fire patterns and frequencies, and resilient vegetation characteristics and vegetative diversity.

Actions

Continue reintroductions of species such as wild turkeys.

Protect riparian habitat across the EMA as critical habitat for a large proportion of species.

Use prescribed and naturally ignited fire, and mechanical thinning, as tools to change or maintain resilient vegetative structure in Apachean Grassland and Savanna, Madrean Pine-Oak Woodland and Madrean Encinal.

Extractive Uses

Objectives

Maintain healthy, functioning ecological systems and the native species associated with those systems.

Maintain essential habitat elements for the Mexican Spotted Owl, including rocky canyons with a naturally functioning water cycle, north facing cliffs, and a complex forest structure with uneven-aged, multistoried mature or old-growth stands and snags.

Restore and maintain mature and old-growth woodland habitat.

Maintain suitable nesting habitat for cavity nesting birds.

Actions

Mitigate collection of reptile species and poaching of wildlife by (1) minimizing the legal transportation system, (2) increasing Forest Service and law enforcement personnel present on the Chiricahua EMA, (3) designating Barfoot Park Zoological Area.

Prevent cutting of dead trees or branches that contain suitable nesting cavities for Whiskered Screech Owl, Elf Owl, Elegant Trogon, Eared Quetzal, Mexican Chickadee, Lucy's Warbler and other cavity-nesting species of concern.

Exclude cattle from riparian areas. Protect all riparian areas from grazing including the stretch between Southwestern Research Station and John Hands, now fenced but not maintained.

Monitor dead and downed wood collecting permits for compliance to prevent nesting habitat from being removed.

Nonextractive Uses

Objectives

Minimize damage to natural and cultural resources.

Actions

Ban all paintball activities on the Chiricahua EMA.

Manage for “acoustic wilderness” i.e. the absence of man-made noise.

Ban light aircraft and ultralight over-flights on the Chiricahua EMA below an altitude of 10,700' [1,000' above highest elevation point in EMA]

Prohibit generator use in campgrounds

Limit and control noise that originates from roadways.

At John Hands campground, limit vehicle access to minimize damage to riparian habitat.

Manage vehicle access to popular undeveloped camping areas where habitat has been destroyed and riparian areas are being impacted. Place large rocks or other barriers to deter off-road driving.

Roads/Transportation System

Objectives

Minimize damage to natural and cultural resources from legal roads and from illegal user-created roads.

Actions

Close road from Rucker to John Long Canyon.

Protect existing roadless areas in the Chiricahua EMA in order to minimize habitat fragmentation and degradation. Protect uninventoried roadless areas through appropriate management zoning.

Enforce existing regulations that prohibit cross-country travel and off-highway vehicle use in restricted areas such as washes and special closure areas.

Special Management Areas

Objectives

Protect Roadless area values and characteristics.

Provide opportunities for quiet recreation.

Minimize habitat fragmentation and degradation, and maintain biological corridors and essential habitat for species through the exclusion of roads.

Adequately consider the suitability of national forest system lands for inclusion in the National Wilderness Preservation System.

Actions

Analyze all roadless areas for wilderness suitability.

Manage 92,471 acres of the Chiricahua EMA to maintain their current wilderness suitability. See Figure 2.4 for a map of the area to be managed for wilderness suitability.

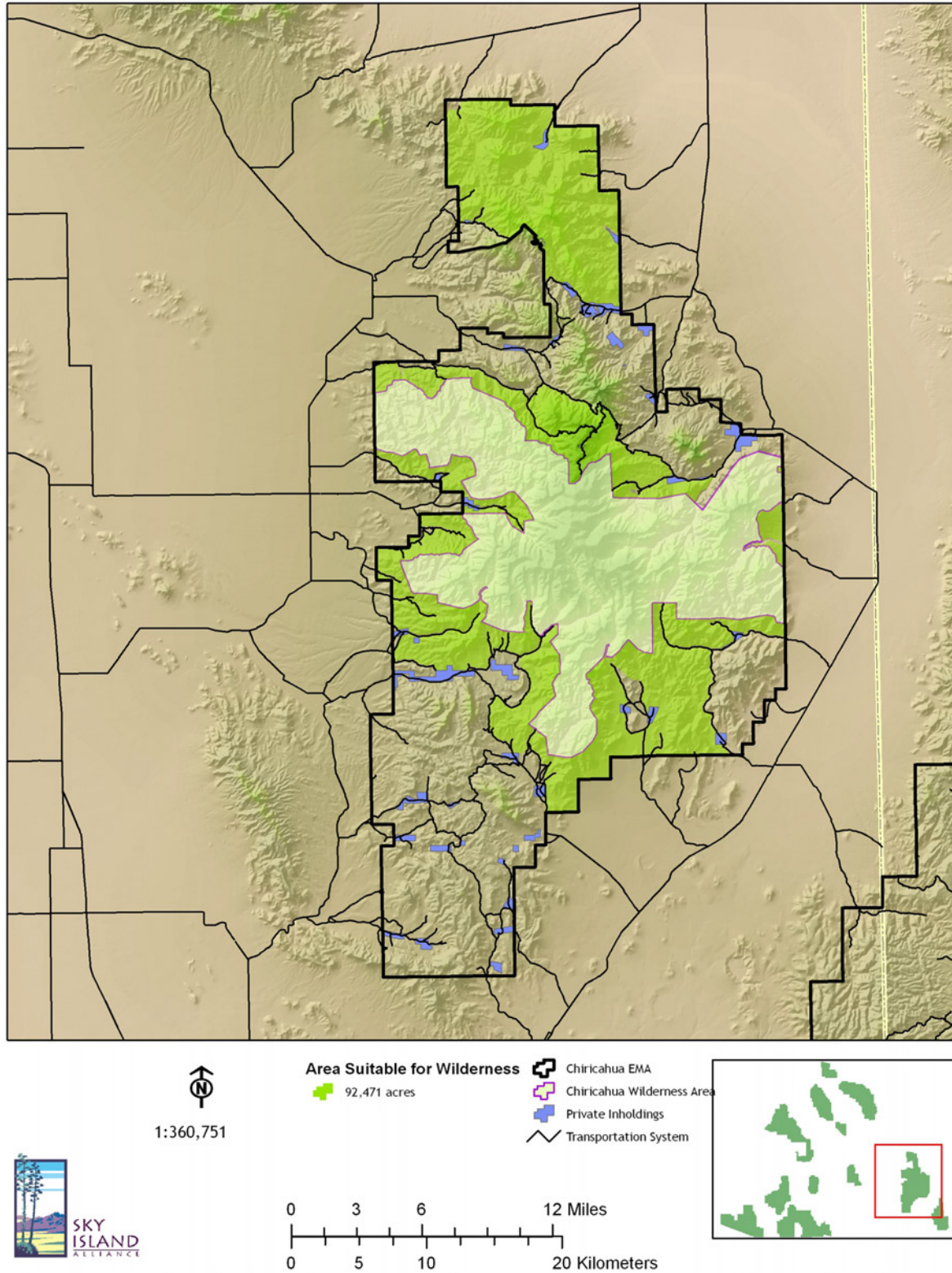


Figure 2.4 Area Suitable for Wilderness and to be Managed for Wilderness Characteristics

Wilderness

Wilderness is a cornerstone for protecting biological diversity and ecological sustainability on the Forest. Whether designated, or proposed, these areas provide a refuge for many species from large carnivores to small invertebrates. They also provide opportunities for the highest quality primitive recreation including activities such as hiking, backpacking, horsepacking and hunting. As roadless areas become increasingly scarce in the United States, remaining roadless areas on the National Forest that meet wilderness criteria deserve protection.

The Coronado National Forest is required to analyze potential Wilderness Areas during Forest Plan Revision. It is mandated by both statute and regulation that the Forest Plan revisions include wilderness suitability analyses. In this document, areas suitable for wilderness are mapped and described for each Ecosystem Management Area. Lands with wilderness characteristics must be considered for recommendation as potential wilderness areas during plan revision. These areas should be designated as Wilderness Study Areas in recognition of their outstanding qualities and managed to protect their wilderness characteristics. Identification of areas suitable for wilderness should not be influenced by nonwilderness activities or uses that can be seen or heard from areas within the potential wilderness. Protection of wilderness-quality roadless areas through designation as Wilderness Study Areas is key to ensuring the ecological integrity of the Coronado National Forest. Remaining roadless areas with wilderness characteristics are essential tools for the Coronado National Forest to be able to maintain ecological sustainability on each Ecosystem Management Area and across the Forest.

CHIRICAHUA WILDERNESS

The Chiricahua Wilderness consists of 87,700 acres surrounding the 9,797-foot Chiricahua peak. At its lowest elevations the area is a mixture of Madrean oak savanna and woodland with more brushy species like mesquite and manzanita in some areas. Lower elevation canyons support a variety of conifer species as well as deciduous trees in wet canyons. As one moves up the mountain many habitat types are encountered and the highest points in the Wilderness

pine-oak and mixed-conifer forests. The Wilderness is characterized by steep elevations and precipitous canyon walls, as well as more gentle terrain in much of the higher elevations. The Wilderness adjoins the Chiricahua National Monument, known for its spectacular geological formations, toward the north end of the Chiricahua range. The landscape supports unusual birds that are most often seen in Mexico, and diverse plant life including Mexican white pine, Apache pine, Douglas fir, Engelmann spruce, white fir, aspen, juniper, piñon, Arizona madrone and oak.

AREAS SUITABLE FOR WILDERNESS

The Chiricahua Ecosystem Management Area contains seven distinct roadless areas and has both the Chiricahua and Pedragosa Mountains within its boundaries. The Chiricahua Wilderness Area (87,700 acres) lies in the middle of this complex of roadless areas, and has 61,399 contiguous roadless acres. Situated only 20 miles north of the International Border, this EMA is an important link for Mexican species that travel north into the U.S. Sky Islands. It is part of a bird migration corridor linking the U.S. Rockies with the Sierra Madre Occidental.

In the northern Chiricahuas, the 8,113-foot Cochise Head rock formation towers a mile above the adjacent valleys and has been a landmark for untold generations. Vegetation zones range from semi desert grasslands to Ponderosa pine and mixed-conifer forests at the higher elevations. As a link to the Dos Cabeza Mountains and farther north to the Pinaleño Mountains, this area acts as an important wildlife corridor for species traveling north-south along the string of mountains in southeastern Arizona. Throughout this roadless area, outstanding opportunities for solitude and primitive recreation exist.

Cultural/Archaeological Values

This area was a favorite spot of the Chiricahua Apache and the Chiricahua Mountains are imbued with the history of southeast Arizona. Several of Cochise's primary rancherías was located in the Chiricahuas. He used this range as a refuge during the 1860s and 1870s, while conflict raged against Anglo and Mexican settlers.

Recreational/Scenic Values

The Chiricahuas offer outstanding opportunities for remote hiking, camping, and hunting. The roadless areas appeal to those who seek out little known areas and appreciate remote recreational opportunities. The area has few well-maintained trails. In contrast to visitation in the Chiricahua Wilderness Area, the southern roadless areas rank near the bottom of visitor days across the Coronado National Forest, not because of the lack of attraction but because of their rough access and seclusion. Visitors can expect breathtaking views. From the high cliffs of Limestone Mountain to the secluded canyons of Hunt, High Lonesome and Bruno, wilderness abounds. All roads entering the area are rough at best and four-wheel drive is needed for almost all sectors.

In the north, the visitor standing on the bald peak of towering Cochise Head takes in sweeping views in all directions and a sense of wonder and vastness sweeps over those who manage to find their way here. The rock formations alone astound; hoodoos, towers, spikes, ravines, caves and slot canyons are commonplace. In the lush canyons draining to the adjacent valleys, the brilliant color of maple, cottonwood, and sycamore trees turn the landscape into a shimmering array of scenic wonder in the fall. Combined with the ever-changing hues of sunlight on the many rock faces, this unit is a vibrant opportunity for remote recreation and adventure. Only three trails reach the interior of the northern Roadless areas — Wood, Emigrant, and Indian Creek Trails. Visitors on horseback or foot can explore the many interesting side canyons, use their skills in orienteering among the twists and turns of the landscape, or test their hunting skills against the challenging terrain. Sufficient space for car camping exists nearby; other canyons such as West Whitetail, Fox, and Triangle provide additional access points.

Bird watching, scenic viewing, and photographic opportunities also abound within this unit. Red maple and gold aspen leaves combined with the glowing rhyolite rock makes for magnificent scenic qualities. The cliffs and riparian areas attract many raptors and rare subtropical birds abound that are unique to this region of the country so near the Mexican border. The wild call of Peregrine Falcons echo off the canyon walls and Mexican Spotted Owls find a cool and quiet refuge here.

Watersheds

In the north, the major drainages of Indian Creek, Whitetail Creek, and Wood Canyon run east and north. These watersheds gather an important source of water for agricultural interests in the upper San Simon Valley south of Interstate 10, as well as for the people residing in the area. Jhus Canyon and Cave Creek are the main drainages in the two roadless areas found closest to Portal. Runoff from the north end of the Chiricahuas eventually finds its way to the Gila and then the Colorado River.

In the southern end, Bruno Canyon and the side canyons associated with Big Bend Creek in the southern Chiricahuas, often referred to as the Pedragosa Mountains, course their way around the Swisshelm Mountains to the west before turning south at Whitewater Draw and eventually connecting with the Río San Bernardino in northern Sonora, Mexico.

Vegetation

Rare and important riparian habitats are present within the northern unit. Notably, Wood Canyon, Indian Creek, and Emigrant Canyon support lush vegetation of bigtooth maple, Arizona sycamore, Frémont cottonwood, and other riparian obligates. One of the biggest juniper trees in the United States occurs in Wood Canyon; at more than 23 feet in diameter and 75 feet high it is a rare survivor of the days when harvest of junipers occurred for their rot-resistant heartwood, prized for fencing in early ranch days. Riparian strips in the southern part of the EMA, such as High Lonesome and Box Canyons, contain a mix of Madrean oaks and riparian obligates such as Frémont cottonwood, Arizona walnut, and velvet ash. The upper drainages are lush in vegetation and provide important habitat for many species of birds and mammals that inhabit the Pedragosas, and the Chiricahuas to the north. The slopes are dominated by Ponderosa pine and mixed conifer in higher elevations and Madrean oak woodlands in midland elevations.

The lower drainages, such as Big Bend, contain desert willow and mesquite, with a few netleaf hackberries and Arizona walnuts. The more interior canyons, such as Box Canyon, contain Frémont cottonwood, Arizona walnut, and velvet ash. Madrean oaks are also found in or near many of the drainages. Box Canyon is producing many young cottonwoods, most probably from the floods of 1993. The valleys and mesas contain semi-desert grassland, with transition to interior chaparral on the south-facing

slopes. Junipers are sparse on the lower slopes, increasing in frequency on the higher slopes. Oaks are intermixed among junipers on the north-facing and higher slopes.

The Cave Creek drainage is one of the longest in the Chiricahuas with over 25 linear miles of sycamore and other riparian vegetative associations. Habitats within the watershed include spruce-fir and mixed conifer, pine and Madrean evergreen oak woodlands, sycamore riparian associations, mesquite, desert scrub and piñon-juniper. Rhyolite cliffs provide structural diversity and a variety of microclimates. Cave Creek's tall canyon walls plus its generally southwest to northeast aspect of the drainage mean the riparian area is relatively sheltered from summer climatic extremes. Cold air drainage from northeast side of the Chiricahuas highest peaks create conditions downstream that are more mesic conditions than are found in neighboring canyons. Cave Creek has numerous springs and perennial water flows to about the 5,000 foot level in summer, lower in winter.

Jhus Canyon has about 3.5 miles of riparian in its main fork, and an additional 4 miles of side drainage with some riparian. The vegetation at the lower east end is desert grassland with large sycamores growing in the alluvium-filled gravel wash. The canyon narrows and becomes more mesic halfway up its length, and at higher elevations contains mature sycamore, maple, and Gambel oak stands with some conifer.

Wildlife—Common and Sensitive Species

The southern roadless areas are exceptionally good deer habitat with outstanding grasslands and open terrain. Quail and javelina are also locally abundant. Other species include mountain lion and a healthy population of black bear. Many predominantly Mexican bird species can be spotted here. The semidesert grasslands, Madrean oak woodlands, and interior chaparral provide critical cover for many of these animals, including the jaguar.

An important feature of the EMA is its population of birds of prey. (See Proposed Cave Creek Zoological Botanical Area, page 2-24.)

The Chiricahua Roadless Complex provides habitat for dynamic populations of common and sensitive species. These habitats should be protected to maintain healthy levels of wildlife populations, to prevent species decline and extirpation, and to provide

a refuge for rare species that live and travel through these ranges. The following is a partial list of the sensitive species and their status within the Chiricahua Roadless Complex.

APACHE GOSHAWK (*Accipiter gentilis apache*): The Apache goshawk occurs throughout the Chiricahuas. It is larger and darker than the Northern Goshawk and as a putative subspecies of the Northern goshawk it is considered a Species of Concern under the Endangered Species Act, as a Sensitive Species by the United States Forest Service (USFS), and as Wildlife of Special Concern by the Arizona Game and Fish Department (AZGFD). Unlike hawk species that hunt in open country, the Apache goshawk prefers high-forested mountains and Madrean oak woodlands.

MEXICAN LONG-TONGUED BAT (*Choeronycteris mexicana*): The Mexican long-tongued bat occurs in the northern Chiricahuas and is listed as a Species of Concern under the Endangered Species Act, as a Sensitive Species by the BLM, and as Wildlife of Special Concern by the AZGFD. The Mexican long-tongued bat inhabits canyons of mixed-oak conifer forests in mountains that rise from the desert as far north as the Santa Catalina Mountains and as far west as the Baboquivari Mountains.

NORTHERN BUFF-BREASTED FLYCATCHER (*Empidonax fulvifrons pygmaeus*): The northern buff-breasted flycatcher occurs throughout the Chiricahuas and is listed as a Species of Concern by the Endangered Species Act and as Wildlife of Special Concern by the AZGFD. This flycatcher inhabits open stands of pine or sycamore and riparian vegetation, breeding only in the Chiricahua, the Huachuca, and the Santa Catalina Mountains.

GREATER WESTERN BONNETED BAT (*Eumops perotis californicus*): The greater western bonneted bat occurs in the northern Chiricahuas and is listed as a Species of Concern under the Endangered Species Act.

LESSER LONG-NOSED BAT (*Leptonycteris curasoae yerbabuena*): The lesser long-nosed bat occurs in the northern Chiricahuas and is listed as Endangered under the Endangered Species Act, as a Sensitive Species by the USFS, and as Wildlife of Special Concern by the AZGFD. It inhabits desert grassland and shrubland up to oak transition and spans from the Picacho Mountains south into Mexico.

MEXICAN SPOTTED OWL (*Strix occidentalis lucida*): Fourteen PACs (Protected Activity Centers) for

Mexican Spotted Owl pairs occur in the central and northern Chiricahuas. The species is listed as Threatened under the Endangered Species Act, as a Sensitive Species by the USFS, and as Wildlife of Special Concern by the AZGFD. It inhabits dense old-growth mixed-conifer forests and mature riparian deciduous forest, and requires a microclimate that is cool and thermally stable for nesting and roosting. It is most often found by day roosting in dense trees at the base of north-facing cliffs

CHIRICAHUA LEOPARD FROG (*Rana chiricahuensis*): The Chiricahua leopard frog occurs in the complex of

roadless areas found in the Chiricahua EMA and is listed as Threatened under the Endangered Species Act, as a Sensitive Species by the USFS, and as Wildlife of Special Concern by the AZGFD. It inhabits aquatic areas in woodlands, grasslands, and deserts in rocky streams with deep pools east and south of the Mogollon Rim.

CHIRICAHUA FOX SQUIRREL (*Sciurus nayaritensis chiricahuae*): This species is endemic to the Chiricahuas.

Special Management Areas

Special Interest Areas are designated to protect unique values including botanical, zoological, geological, historical, or scenic values. They may also be designated to protect and manage sensitive or imperiled species or other elements of biological diversity. Special Interest Areas help the Forest Service preserve important historic, cultural and natural aspects of our national heritage. Two special interest areas currently exist on the Chiricahua Ecosystem Management Area, South Fork Zoological and Botanical Area, and Pole Bridge Research Natural Area. The extraordinary characteristics of the Management Area warrant the designation of a two new Special Interest Areas, Cave Creek Canyon Zoological and Botanical Area, and Barfoot Zoological Area.

South Fork Zoological and Botanical Area

This area consists of 762 acres that have been identified as supporting flora and fauna associations that are unique enough to warrant special management. South Fork is known for nesting elegant trogons and Mexican spotted owls (2006) along with a great diversity of other resident bird species. The south fork of Cave Creek is a gently to moderately sloping, frequently flowing intermittent stream with native riparian vegetation.

Pole Bridge Canyon Research Natural Area

The Pole Bridge Research Natural Area encompasses the short and steep drainage of Pole Bridge Canyon located within the great Turkey Creek watershed. It is on the west side of the mountains within the Chiricahua Wilderness. The area was

designated to protect populations of southern Arizona pines including Apache pine, southwestern white pine, piñon pine, and Arizona pine. Goshawks and Mexican spotted owls occur in the vicinity of the RNA. Other rare elements include the Chiricahua fox squirrel, and red-faced warbler.

Proposed Cave Creek Canyon Zoological Botanical Area

SIZE: Approximately 50 square miles

BOUNDARIES: The Cave Creek Canyon Bird of Prey ZBA should include the entire Cave Creek watershed, including its tributary Silver Creek (Figure 2.5).

ELEVATION RANGE: Approximately 4600 to 9700 feet

GENERAL DESCRIPTION OF AREA: Located in the Chiricahua Mountains, Cave Creek Canyon lies in eastern Cochise County in southeast Arizona, approximately 10 miles west of the New Mexico line and 50 miles north of the Mexican border. The Cave Creek drainage is one of the longest in the Chiricahuas.

The proposed Cave Creek Canyon Bird of Prey ZBA should include the approximately 50 square mile Cave Creek watershed, including Silver Creek, in the northeast corner of the Chiricahua Mountains. The area includes some designated Wilderness and the existing South Fork Zoological Botanical area. Apart from a 160-acre inholding divided between 9 owners, including the American Museum's Southwestern Research Station, the proposed area lies within the Coronado National Forest in the Douglas Ranger District.

CURRENT USES: This area is currently used for biological research, bird watching, education, ecotourism-based and private wildlife viewing, hiking, camping, hunting, and grazing. There are 11 summer recreation residences in the watershed.

JUSTIFICATION FOR DESIGNATION: Cave Creek Canyon is a world-famous birding area, renowned for its diversity of bird life. In recent years, an astounding fact has emerged from research I and others have done in the area: the Cave Creek area supports the U.S.'s densest known population of nesting raptors. This single fact makes it of global biological significance.

In an approximately 20.5 square mile study area (Figure 2.5) we found 259 nesting pairs of hawks, falcons, owls, falcons, eagles, ravens and vultures. The concentration of breeding raptors is over 4 times that of Idaho's famous Snake River Birds of Prey National Conservation Area, managed by the BLM, where 16 species of raptors are found nesting. A total of 24 species of birds of prey breed in the Cave Creek study area and six more species have nested within 25 miles of the proposed ZBA. An additional five species winter or regularly pass by on migration, for a total of 35 species of birds of prey using this area in southeast Arizona (Table 2.5). Five species of small owl comprise over 60% of the nesting pairs of raptors, some nesting as close as 180 feet from conspecifics. Arizona's first nesting record for Short-tailed Hawks was documented just off the proposed Cave Creek ZBA in 2007.

HABITATS: The Chiricahuas are the largest of the 11 sky island mountain systems on the Coronado, and along the 25 miles of Cave Creek and its major tributaries the mix of sycamores and oaks supports dense populations of Acorn Woodpeckers, bird that are an important source of nest cavities used by the many small owls. Other habitats within the proposed area include spruce-fir and mixed conifer, pine and Madrean evergreen oak woodlands, sycamore riparian associations, mesquite, desert scrub and piñon-juniper. Rhyolite cliffs provide structural diversity and nesting, roosting and foraging habitat for several species of raptors. The tall canyon walls and generally southwest to northeast aspect of the drainage mean the riparian area is somewhat sheltered from summer extremes and is more mesic than similar canyons

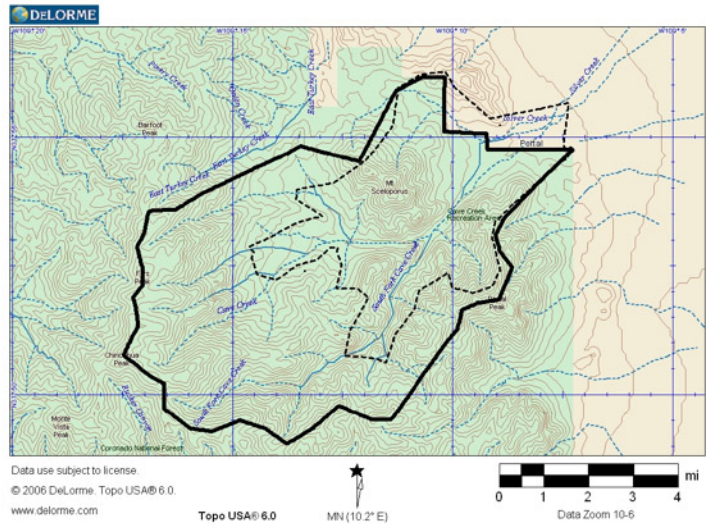


Figure 2.5 Proposed Cave Creek Canyon Zoological and Botanical Area

elsewhere. Cave Creek has perennial water down to about the 5,000 foot level in summer, lower in winter.

OTHER IMPORTANT ASPECTS OF THE AREA:

The National Audubon Society has designated all of the Chiricahuas as an Important Bird Area at the Continental level, and it should qualify for a Global level IBA this year.

The Chiricahua Regional Council has endorsed the idea of the Cave Creek Canyon Bird of Prey ZBA.

The American Museum of Natural History's Southwestern Research Station (SWRS) has been based in the canyon since 1955. Hundreds of research projects have been conducted on and around the SWRS grounds, including long-term studies stretching over decades.

The South Fork Zoological Botanical Area was established to protect the South Fork ecosystem. This area is heavily visited by birders in search of the Elegant Trogon, a highly sought-after bird with a mainly Mexican distribution, and several species of owl including Whiskered Screech Owl, Elf Owl and Flammulated Owl.

The USFS has a historic ranger station near Portal, now operated intermittently as a Visitor Information Center. It would make an ideal center for interpretive activities.

The Nature Conservancy has a small preserve created by easements on private land below the USFS boundary above Portal.

There are five developed USDA Forest Service campgrounds and a picnic area in the canyon. Campgrounds are used year-round by birders, hunters, and others seeking recreation. Hiking trails follow the larger drainages, several other trails offer routes to high country and the Crest Trail traverses the upper end of the watershed.

Hunting is an important use in fall and winter months. The area along the canyon bottom is off limits to weapons discharge in a ½ mile wide strip from the Forest boundary to above the Southwestern Research Station.

Rhyolite is not suitable for climbing and rock-climbing is not often practiced in the canyon so disturbance to birds of prey from climbing is not an issue.

Ecotourism is the most important economic activity. 95% of the local businesses in and around Portal are related to or dependent in one way or another on the famed biotic richness of this area.

The town of Portal has about 150 residents and is situated where the canyon leaves the mountains. Many residents are retired and interested in nature, and there is a ready supply of volunteers to help at the VIC.

One grazing lease is in current use in the proposed ZBA; its boundaries are the same as the proposed special designation area, i.e. the Cave Creek watershed.

13,000 acres at the scenic mouth of the canyon were withdrawn from mineral entry in the early 1990s.

THREATS: The greatest current threat to the proposed ZBA is fire, although road access to the canyon bottoms for fire vehicles is good and recent fire starts near roads have been quickly suppressed. The Burro Fire in 2005 was caused by undocumented aliens and the potential exists for more such incidents.

In recent years, human and drug smuggling traffic has increased and it has moved into the mountains from the valleys. Trash and human waste are a problem in some heavily-traveled areas.

Arizona is growing fast and a longer-term threat is increased visitation pressure on the area from people seeking shade and cool temperatures for recreation in the summer months. Pressure can be expected from interests wanting to expand campgrounds and other facilities.

Table 2.5 Species of Raptors Utilizing the Cave Creek Canyon Study Area

Four species in study area nested off USFS-managed land. The proposed ZBA will have 20 of the 24 species nesting in the study area.

Raptors Using the Cave Creek Canyon Study Area

| Nesting Species | Number of Pairs | Species Nesting Within 10 Miles of Study Area |
|-----------------------|-----------------|---|
| Barn Owl * | 1 | Northern Harrier |
| Burrowing Owl * | 1 | Gray Hawk |
| Elf Owl | 55 | Harris' Hawk |
| Flammulated Owl | 11 | Short-tailed Hawk |
| Long-eared Owl | 1 | Black Hawk |
| Western Screech Owl | 38 | White-tailed Kite |
| Whiskered Screech Owl | 55 | |
| Northern Pygmy Owl | 21 | |
| Saw-whet Owl | 1 | WINTERING SPECIES |
| Mexican Spotted Owl | 5 | Ferruginous Hawk |
| Great Horned Owl | 11 | Merlin |
| Golden Eagle | 1 | Short-tailed Hawk |
| Peregrine Falcon | 4 | |
| Prairie Falcon | 2 | |
| American Kestrel | 2 | MIGRANTS |
| Sharp-shinned Hawk | 1 | Bald Eagle |
| Cooper's Hawk | 14 | Black Vulture |
| Northern Goshawk | 1 | |
| Swainson's Hawk * | 1 | |
| Red-tailed Hawk | 11 | |
| Zone-tailed Hawk | 4 | |
| Turkey Vulture | 8 | |
| Chihuahuan Raven * | 1 | |
| Common Raven | 9 | |
| TOTAL | 259 | |

* Species nesting in study area but off USFS land

Birding is done by ear as well as by sight, and noise abatement should be a part of a management plan. Current sources of noise include generators used at Sunny Flats after it was paved and made RV-accessible; groups on motorcycles touring through the canyon; and low-flying aircraft such as ultralights which are becoming a popular form of recreation and are a source of noise as well as a dangerous threat to certain nesting raptors, in particular Golden Eagles which are intolerant of disturbance during incubation and early nestling stages.

Forest users participating in 2006 forest planning focus groups have identified silence, peace and quiet and the absence of man-made noise as important forest values.

RECOMMENDATIONS FOR FUTURE USE: Current uses are compatible with a future special designation for the Cave Creek Bird of Prey ZBA.

- ★ Birding will probably increase and non-birder visitors may want specifically to see birds of prey, and this should be anticipated and managed for.
- ★ Trail, road and campground maintenance should continue but no further paving of campgrounds or widening, re-routing or additional paving of roads should be done.
- ★ Removal of hazard trees should be done in consultation with the district biologist as many of these trees support owl and other bird nests as well as rodent and reptile shelter.
- ★ Fences need to be maintained to keep cattle within their allotments.
- ★ Guide-outfitter permits have been very difficult to obtain apparently due to USFS staff time constraints, but this situation should be remedied.
- ★ The Visitor Information Center should be staffed and interpretive material added to highlight the Cave Creek Canyon Bird of Prey ZBA.

PROPOSED BY: Helen Snyder

Proposed Barfoot Zoological Area

NAME: Barfoot Zoological Area

SIZE: Approximately 395 acres (160 hectares)

BOUNDARIES: This Zoological Area is bounded on the north side by the top of the ridge that includes Barfoot Peak, on the east side by the top of the ridge that includes Buena Vista Peak, and on the southwest side by a line connecting these two ridges such that Barfoot Spring and Barfoot Park are included (Figure 2.6).

ELEVATION: Approximately 7,800 to 8,800 feet

General description of area: This Zoological Area includes ponderosa pine and mixed conifer forest, as well as subalpine meadows and a spring. Steep talus slopes are abundant on the Barfoot and Buena Vista ridges.

CURRENT USES: This area is currently used for wildlife viewing, hiking, camping, off-road vehicle use, and hunting. The USFS has made an effort in recent years to restrict off-road vehicles to existing dirt roads.

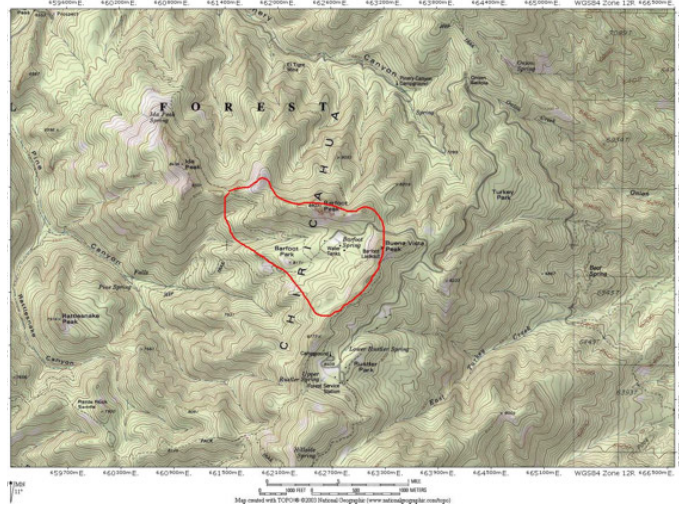


Figure 2.6 Proposed Barfoot Zoological Area

This area is renowned worldwide by birders and reptile enthusiasts for the diverse and unusual species it supports. Due to the high diversity of habitats within this area and its proximity to Mexico, many bird species that are uncommon in the United States, such as olive warblers, Grace's warblers, red-faced warblers, zone-tailed hawks, short-tailed hawks, yellow-eyed juncos, Mexican chickadees, and numerous hummingbird species, can be observed here.

This area supports the largest known population of twin-spotted rattlesnakes (*Crotalus pricei*) in the United States. This state-protected species is often illegally collected here for sale in the pet trade. This area likely represents the best habitat for twin-spotted rattlesnakes in the U.S., and therefore conservation of this population will be crucial to ensuring that twin-spotted rattlesnakes do not become extirpated from the U.S. as a result of climate change and illegal collection.

In addition to twin-spotted rattlesnakes, the Barfoot Zoological Area provides habitat for almost every reptile and amphibian species found in the Chiricahua Mountains at its elevation, including canyon tree frogs (*Hyla arenicolor*), mountain spiny lizards (*Sceloporus jarrovi*), bunch grass lizards (*Sceloporus slevini*), striped plateau lizards (*Sceloporus virgatus*), madrean alligator lizards (*Elgaria kingii*), and black-tailed rattlesnakes (*Crotalus molossus*).

RECOMMENDATIONS FOR FUTURE USE: Bird and reptile research should be encouraged within the Zoological Area, especially because this area may

undergo drastic changes as a result of climate change in coming decades. I recommend that off-road vehicles be banned from the area due to the disturbance they cause to both birds and birders, the most common recreational users of the area. Wildlife viewing, camping, hiking, and hunting should continue to be permitted within the area.

Currently, there are several undeveloped campsites at Barfoot. The presence of campers may help discourage illegal collecting of twin-spotted

rattlesnakes. It would be helpful if U.S. Forest Service employees involved in the operation of the developed campground at nearby Rustler Park, especially the campground host, routinely visited the Zoological Area to identify and report illegal collection of twin-spotted rattlesnakes.

PROPOSED BY: Dave Prival, Senior Research Specialist, School of Natural Resources, University of Arizona

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