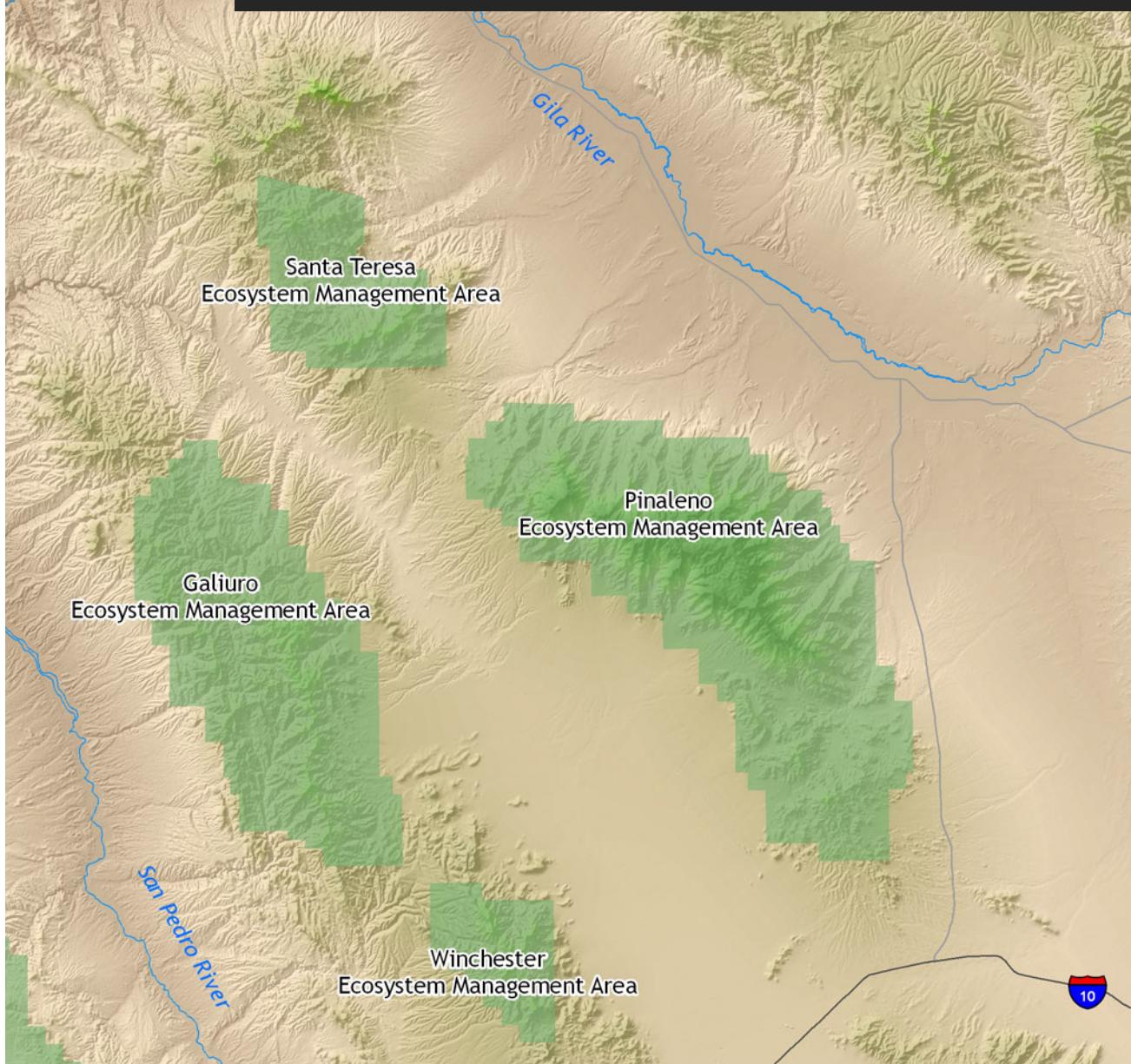


# Safford RANGER DISTRICT







## CHAPTER 9 Santa Teresa Ecosystem Management Area

The Santa Teresa Mountains contain some of the most remote land on the Coronado National Forest. Located in the northeast corner of the Forest, the Santa Teresa Ecosystem Management Area (EMA) encompasses 49,838 acres with elevations ranging from approximately 3,800 feet in canyon bottoms to 7,481 feet at the summit of Cottonwood Mountain. The Santa Teresa Wilderness encompasses 26,780 acres within the forest boundary. Bold and rugged features of the Wilderness include deep canyons, rocky outcrops, steep terrain, and bald summits.

This Ecosystem Management Area is bordered on the north by the San Carlos Apache Reservation, on the northeast by the North Santa Teresa Wilderness (managed by BLM) and on the south and west by state and private land. Access to the area is currently limited because Stowe Gulch Road, which traverses private land, has been locked by the owner due to ATV users causing property destruction. Much of the remaining access roads into the forest require high clearance, four-wheel drive vehicles (Figure 9.1).

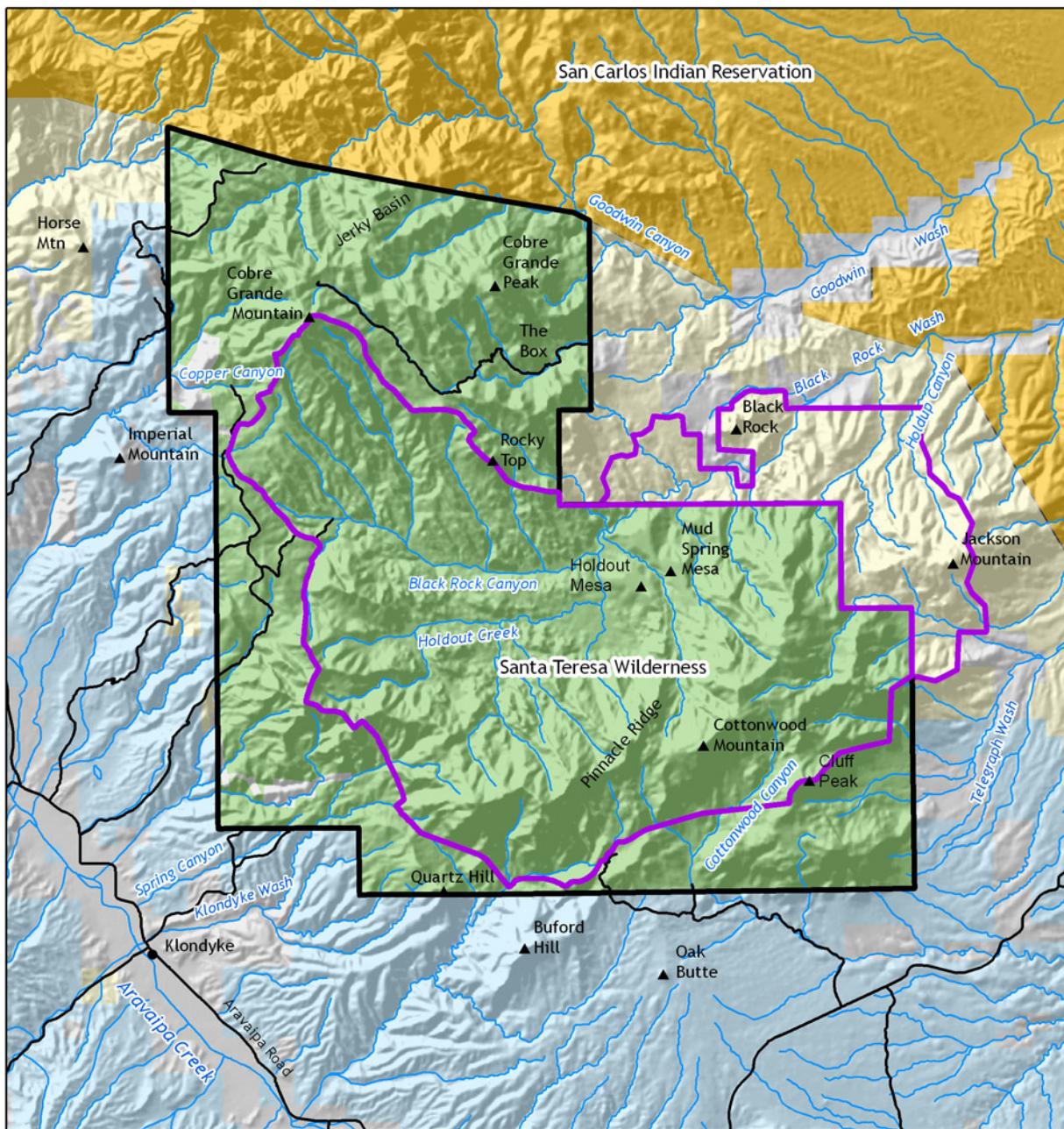
### Natural History

The upthrusted and eroded granite of the Santa Teresa Mountains is similar in geology and appearance to the Wilderness of Rocks area in the Santa Catalina Mountains outside Tucson. Compared to the popular recreation destination of the Catalina range, the Santa

Terasas remain seldom-visited by recreationists. The remote, relatively undisturbed nature of the Santa Teresa Ecosystem Management Area provides ideal habitat for animals that are sensitive to human disruption, and animals like black bears and mountain lions that prefer isolated habitat.

The granite cliffs, buttes and ridges found in the range have been weathered into strikingly picturesque formations. The spine of the Santa Teresas is stratified by deep narrow canyons containing unique microclimates that support high biological diversity. Common species such as coati, javelina and mountain lion live here alongside sensitive species such as peregrine falcon, greater western bonneted bat.

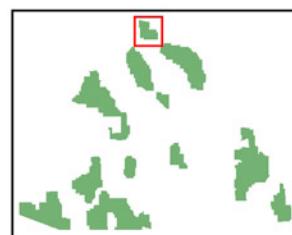
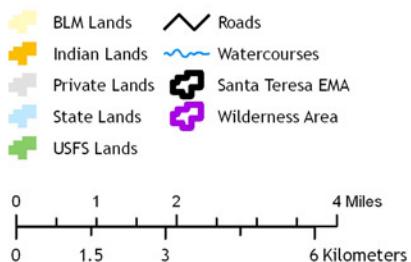
The Management Area offers high quality primitive recreation with opportunities to experience solitude and quiet. This quality is becoming increasingly rare in the face of continued population growth, and should be given special consideration in the Forest Service's mosaic of multiple-use management. The Aravaipa Canyon Wilderness lies to the west of the Santa Teresas. Laurel Canyon in the southwestern portion of the Management Area, feeds into the spectacular Aravaipa Canyon, only 3 miles downstream, which itself connects to the Lower San Pedro River. Aravaipa Canyon and the Lower San Pedro River are nationally recognized as two of Arizona's most valuable biological



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**Figure 9.1 Overview of Santa Teresa EMA**

areas.<sup>1</sup> Run-off from the interior ridges of the Santa Teresa Mountains feeds through Black Rock Canyon, and Holdout Canyon to the Gila River located approximately 13 miles away. The Gila River is the major source of water for residential and agricultural purposes in the Gila Valley region.

The upper reaches and north facing slopes of the highest mountains in the area are composed of patches of vegetation associated with Madrean Pine-oak woodlands, dominated by Ponderosa pine. Transitioning down these slopes at the southern end of the range, the woodlands are composed of southwestern pine, Arizona white-oak, Emory-oak, and other species associated with Madrean pine-oak woodland. South of Limestone and Laurel Canyons, interior chaparral species such as Mexican manzanita, and sugar and single leaf sumac are found. At the lowest elevations vegetation shifts to scrub and desert grasslands.

### **Human Prehistory and History**

The Santa Teresa Mountains, or Sierra de Santa Teresa, have been known by that name for at least two centuries following its appearance on Spanish maps in 1780. These mountains have played host to a range of human inhabitants from native cultures that lived in

or near the range, to gold miners, cattle ranchers and cattle rustlers. The shrub live oak and other brush of the interior chaparral communities once sustained domesticated herds of angora goats. The Weathersby Angoras, the largest herds in the eastern part of the Aravaipa area, ranged in the Santa Teresas from sometime around the turn of the century until 1951.<sup>2</sup>

Like all of the sky islands in the Coronado National Forest, the Santa Teresas and surrounding lands were inhabited and utilized by Apaches. Apache knowledge of this area is part of a long and continuous tradition.<sup>3</sup> The Santa Teresa Mountains reside in the historic and present day homeland of Western Apaches.<sup>4</sup> Apache lived in the area of the range hunting game and gathering food plants.<sup>5</sup> While the range is little visited by modern recreationists, the area is well-known and well-traveled among Apaches. To this day Apache visit the area extensively, and each summer Apache families gather acorns at traditional gathering locations throughout the range. The present day San Carlos Apache Reservation bounds the Santa Teresa Ecosystem Management Area on the northeast side. Remnants of various Apache bands came to be located on this reservation during the wars against these people during the 1870s and 1880s.

## **Elements of Biological Diversity and Cultural Heritage**

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The Santa Teresa 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 Santa Teresa Ecosystem Management Area. The Forest Service identified 32 species of plants and animals including six Threatened or Endangered species, along with other species determined to be Species of Concern or Species of Interest (Table 9.1). These species will be used to guide management decisions.

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 9.2). Although there are many fine variations in

**Table 9.1 Species Identified by the Forest Service to Guide Management Decisions**

<b>Amphibians</b>	
<i>Rana yavapaiensis</i>	Lowland Leopard Frog
<b>Insects</b>	
<i>Cicindela oregonia maricopa</i>	Maricopa Tiger Beetle
<i>Ophiogomphus arizonicus</i>	Arizona Snaketail
<b>Mammals</b>	
<i>Canis lupus baileyi</i>	Mexican Gray Wolf
<i>Lasiurus xanthinus</i>	Western Yellow Bat
<b>Plants</b>	
<i>Arceuthobium blumeri</i>	Southwestern White Pine
<i>Eriogonum arizonicum</i>	Dwarf-mistletoe
<i>Escobaria vivipara</i> var. <i>bisbeeana</i>	Arizona Wild-buckwheat
<i>Penstemon discolor</i>	Bisbee's Pincushion Cactus
<i>Penstemon superbus</i>	Catalina Beardtongue
<i>Perityle dissecta</i>	Superb Beardtongue
<b>Reptiles</b>	
<i>Aspidoscelis burti stictogramma</i>	Slimlobe Rockdasy
	Canyon Spotted Whiptail

**Table 9.2 Foundations of Native Biological Diversity**

<b>"Potential Natural Vegetation Types" (bold) as they correspond with The Nature Conservancy's "Ecological Systems"</b>	
<b>Interior Chaparral</b>	Interior Chaparral
<b>Madrean Encinal Woodland</b>	Madrean Encinal
<b>Madrean Pine-Oak Woodland</b>	Madrean Pine-Oak Woodland
<b>Mixed Conifer Forest</b>	Montane Mixed-Conifer Forest
<b>Semi-desert Grasslands</b>	Apachean Shrubland
<b>Physiographic Features</b>	
Pinnacle Ridge granitic domes	

plant communities on the Santa Teresa Ecosystem Management Areas, 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.<sup>6</sup> Figure 9.2 shows the distribution of ecological systems in the Santa Teresas. Through contact with regional scientists and experts, and other people familiar with the Santa Teresas, we identified ecological systems, physiographic features, additional species and cultural resources that should also be considered in the Forest Plan revision.

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 managing for ecological systems and may require specific management actions or monitoring. Table 9.3 lists additional species whose needs should be assessed during plan revision.

The Santa Teresa 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, and traditional Western Apache uses of the land are also an important part of the Cultural Heritage of the area (Table 9.4).

**Table 9.3 Additional Species that Require Special Management Consideration**

<b>Plants</b>	
<i>Hymenoxys ambigens</i> var. <i>ambigens</i>	Pinaleño Mountains Rubberweed
<i>Cupressus arizonica</i>	Arizona Cypress

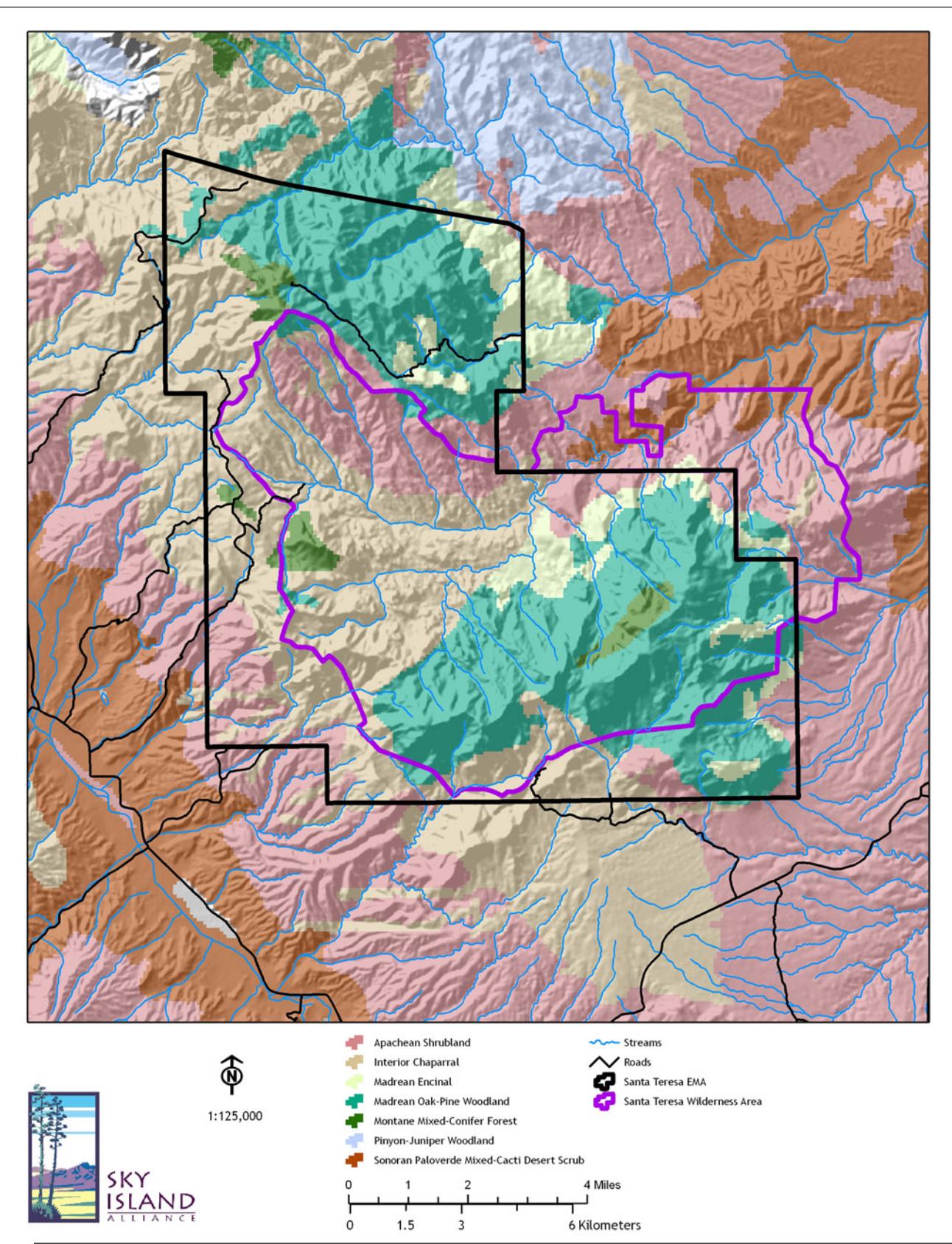


Figure 9.2 Ecological Systems of the Santa Teresa EMA

**Table 9.4 Elements of Cultural Heritage**

Opportunities for primitive recreation and solitude Traditional Apache uses of the land
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## Desired Conditions

\* The Santa Teresa Mountains remain 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 Santa Teresa Mountains and the following: Pinaleño Mountains, Galiuro Mountains, Aravaipa Canyon Wilderness, and wildlands to the north.

\* Negative impacts from road, ATVs, and camping are removed from Cottonwood Canyon.

\* The Santa Teresa Ecosystem Management Area continues to be a high quality location for primitive recreation with opportunities to experience quiet and solitude. Wildlife and human visitors are free from direct disturbance and noise.

## Conservation Assets

Conservation assets work on behalf of desired conditions and against the threats to the ecological and cultural elements of the Santa Teresas. They will contribute to the Forest Service's ability to maintain ecological sustainability on the Management Area. The following emerged as strengths and opportunities for conservation on the Santa Teresa Ecosystem Management Area.

Management Area. It provides a core of relatively undisturbed habitat that contributes to the health of watersheds fed by mountain runoff. It also provides a refugium for species easily disturbed by human presence. The Wilderness is surrounded by 8,922 roadless acres (as identified by Sky Island Alliance). These combine for a total of 35,702 acres of habitat (73% of the Ecosystem Management Area) that is undisturbed by roads. (See also Special Interest Areas on page 9-15)

### Location of Santa Teresa Ecosystem Management Area

The Santa Teresa Ecosystem Management Area is located in close proximity to the neighboring Galiuro and Pinaleño Mountains along with the Aravaipa Wilderness. It is bordered on the north by the San Carlos Indian Reservation, and on the northeast by the North Santa Teresa Wilderness (managed by BLM). Large tracts of state and private land surround the management area to the south and west. The Ecosystem Management Area is currently in a landscape with intact wildlife linkages to neighboring wildlands.

**Significant Opportunity for Wildland Fire Use**  
The remote nature of the Santa Teresa Mountains along with the rural character of the surrounding landscape, create significant opportunity for wildland fire use. Managing naturally-ignited fire to burn so it fulfills its natural role in the ecosystem will help maintain vegetative communities that are more representative of pre-fire suppression conditions. Natural fire occurring at regular intervals creates a mosaic of different vegetation types, cycles nutrients into the soil, helps control insect and disease levels in plants, and reduces heavy fuel accumulation.

### Santa Teresa Wilderness and Surrounding Roadless Areas

The Santa Teresa Wilderness consists of 26,780 acres, comprising approximately 54% of the Ecosystem

## **Threats to the Forest: A Need for Change**

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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 Santa Teresas that are not addressed in the Forest Plan, or have not been adequately dealt through management. The plan revision 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 Santa Teresa Ecosystem Management Area.

### **ADJACENT LAND USES**

Although the Santa Teresa Ecosystem Management Area is currently fairly isolated, the potential exists for future exurban and/or road development in the surrounding valleys. This would disrupt wildlife linkages that allow wildlife to move between the Santa Teresa Mountains and surrounding mountain ranges and wildlands (Figure 9.1). This would also potentially disrupt the current opportunities for quiet recreation and solitude in the management area.

Resources that would be affected by adjacent land development include: springs, ephemeral watercourses, seeps, scenic resources, all native vegetation types and their associated flora and fauna; species particularly sensitive to direct human disturbance (e.g., bats, lizards, desert box turtle, Coues' white-tailed deer); wide-ranging species of terrestrial animals: mountain lion, black bear, coati, pronghorn, deer; and prehistoric and historical sites, structures, and artifacts.

### **EXTRACTIVE USES**

#### **Mining**

No mineral resources have been identified in the Santa Teresa Mountain unit but future prospecting

activity would most likely occur in the area north of Cobre Grand Mountain, the Fisher Canyon area, or at the southwest corner of the Forest.<sup>7</sup>

#### **Ecological Damage in Cottonwood Canyon**

The access point at Cottonwood Canyon is traversing an area currently degraded by over-grazing, fire, and recreation which has lead to excessive erosion. Much of the road (FR677) that is on the forest land is not part of the transportation system. Additionally, a spur created by ATVs travels off this road into the Wilderness Area. Affected resources are riparian woodland and species that depend on them, and Wilderness values. Poorly managed livestock grazing in the Cottonwood Creek area has diminished the riparian habitat by preventing recruitment of riparian tree species and understory.

#### **ROADS/TRANSPORTATION SYSTEM**

The Santa Teresa Management Area is currently remote enough to prevent heavy recreational use by motorized vehicles. However, the proliferation of motorized recreation, coupled with rapidly growing population in the state of Arizona will likely change that over the next 15 years. Current threats from motorized use of the Santa Teresa Ecosystem Management Area include existing non-system roads. Potential future threats include creation of new non-system roads combined with a lack of enforcement of the legal transportation system.

Affected resources include: springs; ephemeral watercourses; seeps; scenic resources, all ecological systems, all native vegetation types and their associated flora and fauna, riparian plant and animal species, species especially sensitive to direct disturbance, Wide-ranging species of terrestrial animals, game species; prehistoric and historical sites, structures, and artifacts.

## **Recommended Objectives and Management Actions**

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The Santa Teresa Ecological Management Area offers great opportunities for primitive recreation where quiet and solitude can be experienced. This contribution to the Coronado National Forest should be a major focus and driver for future management of this area. New management direction that shows foresight and proactively addresses threats will create a

long-term framework for ecological health and sustainability in the Santa Teresa EMA. To confront threats and capitalize on conservation assets, we recommend the following objectives and management actions be incorporated into the revision of the Coronado National Forest Plan and subsequent project level activities.

## **Adjacent Land Uses**

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### **Objectives**

Maintain wildlife corridors between the Santa Teresa EMA and the Pinaleño EMA, the Galiuro EMA, and other surrounding natural areas.

### **Actions**

*Continue to restore and maintain historical fire regimes on and adjacent to the EMA.*

*Monitor current human use of the Santa Teresa EMA. Look at trends in urban, suburban, and exurban growth, and sociographic trends, to project and respond to human pressure on the Forest.*

## **Ecological Restoration**

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### **Objectives**

Maintain a resilient forest that tolerates wildfire, flood, and insect infestation and contains a mosaic of diverse settings for human and natural uses in the Santa Teresa EMA.

### **Actions**

*Utilize wildland fire use throughout the Santa Teresa EMA.*

## **Extractive Uses**

---

### **Objectives**

Preserve the native biological diversity of the Santa Teresa EMA.

### **Actions**

*Mitigate collection of reptile species and poaching of wildlife by minimizing the legal transportation system and closing illegal user-created roads.*

## **Roads/Transportation System**

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### **Objectives**

Maintain the rugged nature and wilderness characteristics of the Santa Teresa EMA.

Maintain opportunities for low-density, high-quality primitive outdoor experiences.

### **Actions**

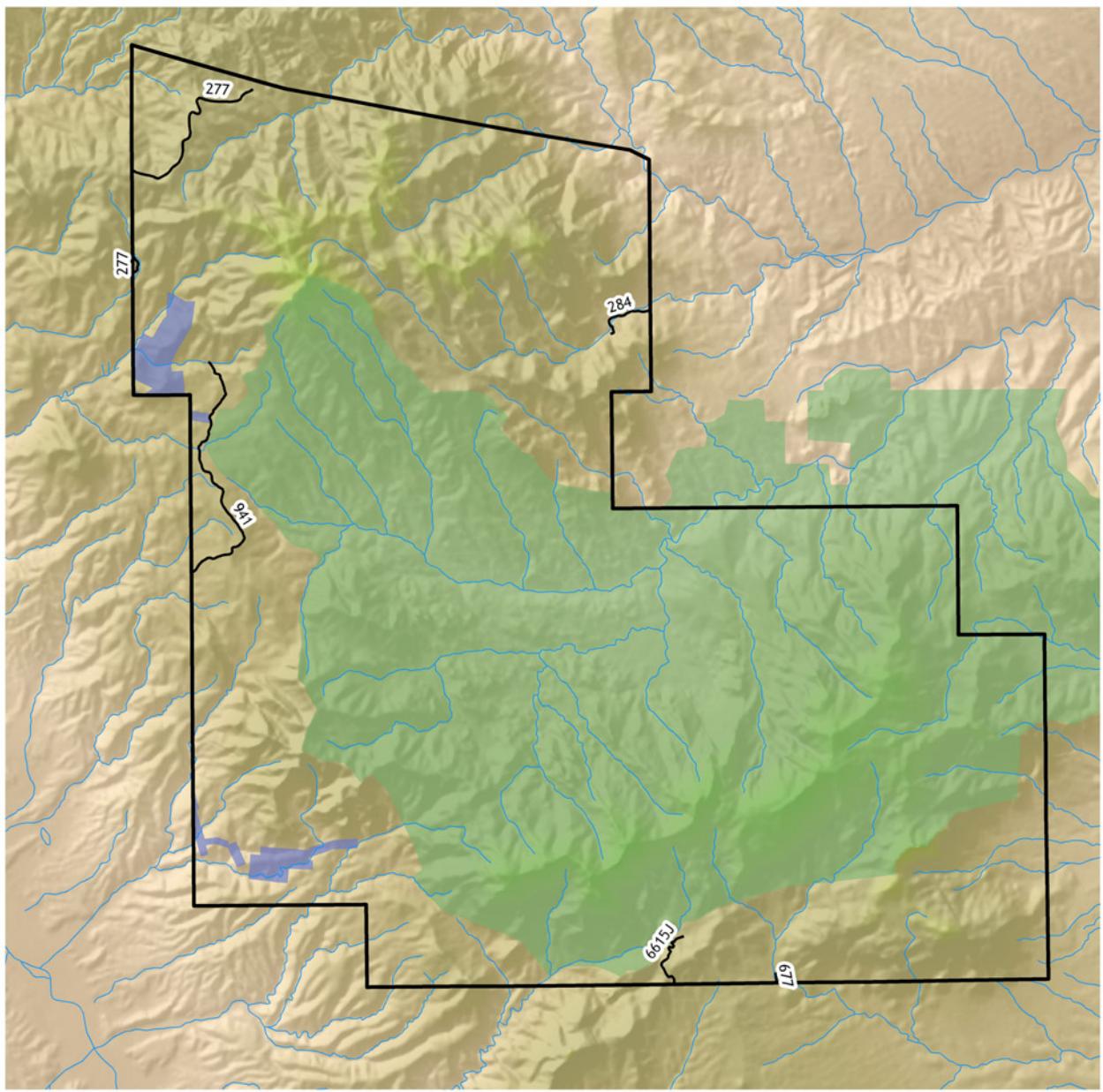
*Enforce existing regulations that prohibit cross-country travel and off-highway vehicle use in restricted areas such as washes and special closure areas.*

*Enforce the restriction of motorized vehicles to current system routes. When the travel map is made final, enforce the use of the revised legal transportation system.*

*Do not allow motorized access into Cottonwood Canyon.*

*Close FR677. (See Figure 9.3 for the proposed transportation system for the Santa Teresa EMA.)*

*Do not allow any further creation of roads in the Santa Teresa EMA.*



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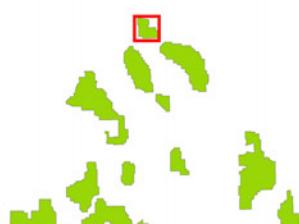


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#### Legend

- [Black square] Santa Teresa EMA Boundary
- [Green square] Santa Teresa Wilderness
- [Blue square] Private Inholdings
- [Open diamond] Open

0 0.5 1 2 Miles  
0 1 2 4 Kilometers



Index Map Scale 1:5,000,000

**Figure 9.3 Travel Management Plan and Route Recommendations for the Santa Teresa EMA**

## Special Management Areas

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### Objectives

Maintain the intact nature, wilderness characteristics, and unfragmented character, of the Santa Teresa EMA.

### Actions

*Manage 20,095 acres of Sky Island Alliance inventoried roadless area (outside of the wilderness) to maintain it as free from roads.*

*Manage 20,095 acres to maintain their wilderness suitability. (See Figure 9.4 for a map of the Santa Teresa Wilderness and the area to be managed to maintain wilderness characteristics.)*

## Wilderness

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### Santa Teresa Wilderness

The Santa Teresa Wilderness, established in 1984 consists of 26,780 acres that occupy about half of the Santa Teresa Ecosystem Management Area. The Wilderness is bordered on the north by the San Carlos Indian Reservation and on the northeast by the North Santa Teresa Wilderness managed by the BLM. Holdout Canyon typifies the rest of the Wilderness with its extremely rugged landscape, and abundant caves and alcoves hollowed into eroded cliffs with picturesque formations. Chaparral vegetation dominates the wilderness with stands of ponderosa pine and Douglas fir along the north flank and crest of Cottonwood Mountain.<sup>8</sup> Black bears live here along with coatis, javelina, mountain lions and Peregrine falcons. Human use of the area is very light.

### Wilderness Suitability

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 Coronado Forest Plan revisions include wilderness suitability analyses. 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

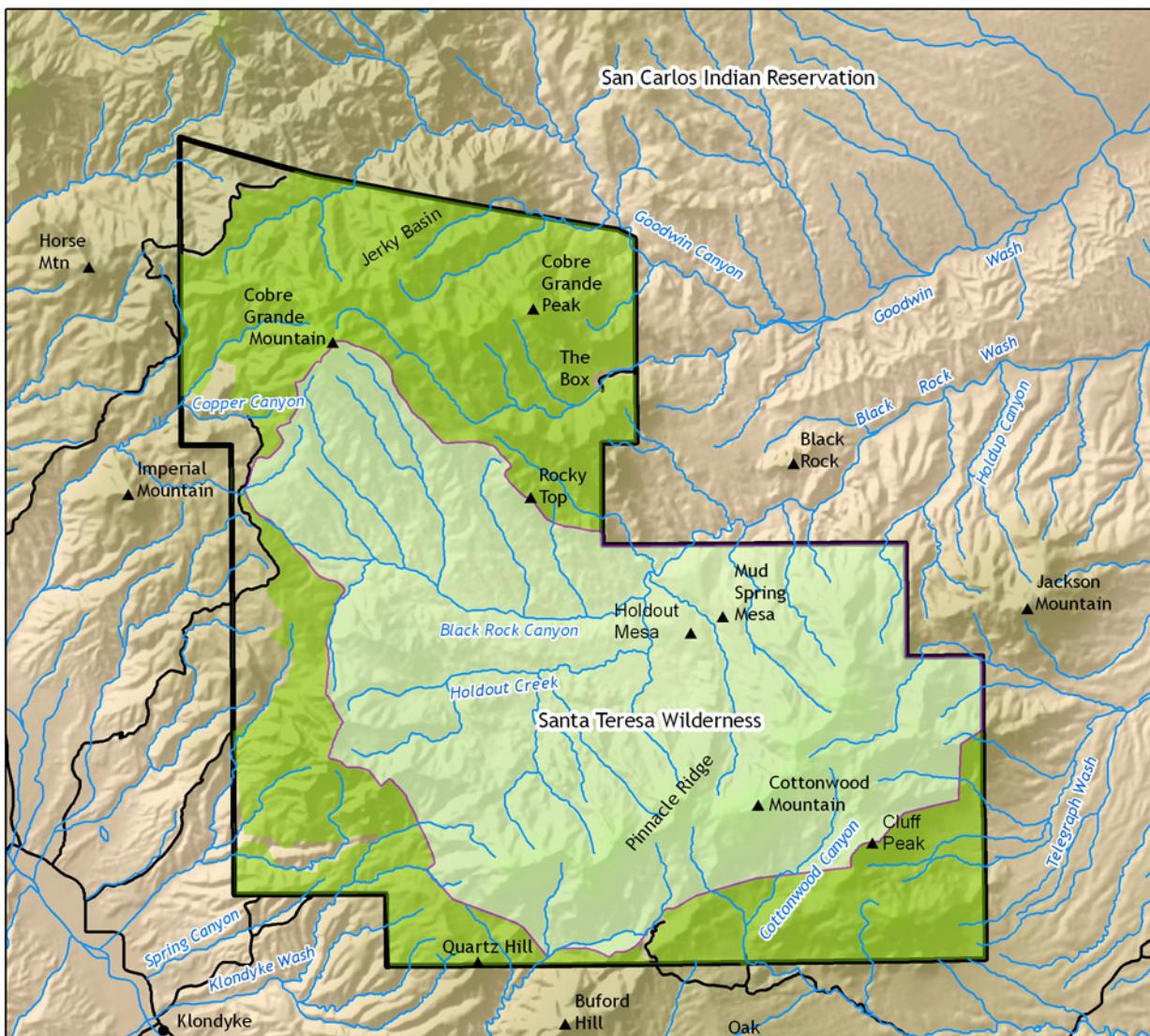
outstanding qualities and managed to protect their wilderness characteristics. Identification of areas suitable for wilderness should not be influenced by nonwilderness activities or uses that can be seen or heard from areas within the potential wilderness. Protection of wilderness-quality roadless areas 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.

The roadless area surrounding the existing 26,780 acre Santa Teresa Wilderness is located in the northern, western, southwestern, and southeastern portion of the EMA and is adjacent to the existing Wilderness and contains 20,095 acres.

Throughout this roadless area, outstanding opportunities for solitude and primitive recreation exist. As such, this roadless area is suitable for addition to the existing Wilderness located here.

The existing Inventoried Roadless Area (IRA) as identified by the Coronado National Forest, via a computer model (Recreation Opportunity Spectrum) not designed to identify roadless areas, and using an outdated transportation system map, identified 8,922 acres in the Santa Teresa IRA. On-the-ground field checking by Sky Island Alliance has determined that the roadless acreage in the Santa Teresa EMA, outside of Wilderness is 20,095

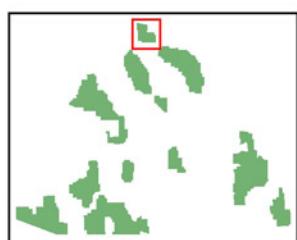
In the northern portion, south facing slopes distribute water into Goodwin, Black Rock, and Holdout Canyons in the heart of the adjacent Santa Teresa Wilderness area, leading to the Gila River approximately 13 miles to the northeast. The Gila



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Area Suitable for Wilderness      Santa Teresa Wilderness  
■ 20,095 acres      Watercourses  
■ Santa Teresa EMA

0 1 2 3 4 Miles  
0 1.5 3 6 Kilometers



**Figure 9.4 Area Suitable for Wilderness and to be Managed for Wilderness Characteristics**

River is the major source of water for residential and agricultural purposes in the Gila Valley region.

Laurel Canyon, in the southwestern part of the IRA feeds into the spectacular Aravaipa Canyon, only 3 miles downstream, which itself connects to the Lower San Pedro River.

These connections make these roadless areas of significant importance for the spring and fall avian migrations, as well as overwintering areas for some species.

The upper reaches and north facing slopes of the roadless area's highest peak, Cobre Grande Mountain (7,159 ft.) are composed of patches of vegetation associated with Madrean montane conifer forests, dominated by Ponderosa pine. The forests and woodlands transitioning down these slopes in the southwestern end of the roadless area are composed of Arizona white oak, Emory oak, and other species

representative of Madrean encinal, while the slopes south of Limestone Canyon and Laurel Canyon introduce Apachean shrubland species such as manzanita, and sugar and single-leaf sumac. The remaining portion of the roadless area on the southeastern corner is comprised of Madrean oak-pine woodland, Madrean encinal, and Apachean Shrubland.

The area as a whole provides a wide variety of habitat for game and non-game species. Animals such as black bear and mountain lion, which favor large areas of relative isolation, have a preference to such areas without roads, within their home ranges. Many other wildlife and game species can be found here, including javelina, mule and white-tail deer, gray fox, bighorn sheep, and coati. Peregrine falcons soar overhead, hunting for prey.

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<sup>1</sup> Brown, D.E. 1989. Ecological values of Bureau of Land Management wilderness study areas in Arizona. The Wilderness Society. Washington, D.C.

<sup>2</sup> Wilson, John P. 1955. Islands in the Desert A History of the Up-lands of Southeastern Arizona. University of New Mexico Press, Albuquerque.

<sup>3</sup> Cordell, Linda. 1984. Prehistory of the Southwest. Academic Press, INC., Orlando.

<sup>4</sup> Opler, M.E. 1941. An Apache Life-way: The economic, social, and religious institutions of the Chiricahua Indians. University of Nebraska Press, Lincoln, London.

<sup>5</sup> Wilson, John P. 1955. Islands in the Desert A History of the Up-lands of Southeastern Arizona. University of New Mexico Press, Albuquerque.

<sup>6</sup> Marshall, R.M., D. Turner, A. Gondor, D. Gori, C. Enquist, G. Luna, R. Paredes Aguilar, S. Anderson, S. Schwartz, C. Watts, E. Lopez, P. Comer. 2004. *An Ecological Analysis of Conservation Priorities in the Apache Highlands Ecoregion*. Prepared by The Nature Conservancy of Arizona, Instituto del Medio Ambiente y el Desarrollo Sustentable del Estado de Sonora, agency and institutional partners. 152 pp.

<sup>7</sup> United States Bureau of Mines. 1993. Mineral Appraisal of Coronado National Forest, Part 10: Santa Teresa Mountains Unit. Intermountain Field Operations, Denver, Colorado. 12 p + Appendices.

<sup>8</sup> Unites States Department of Agriculture Forest Service. 2003. Coronado National Forest Fire Management Plan.