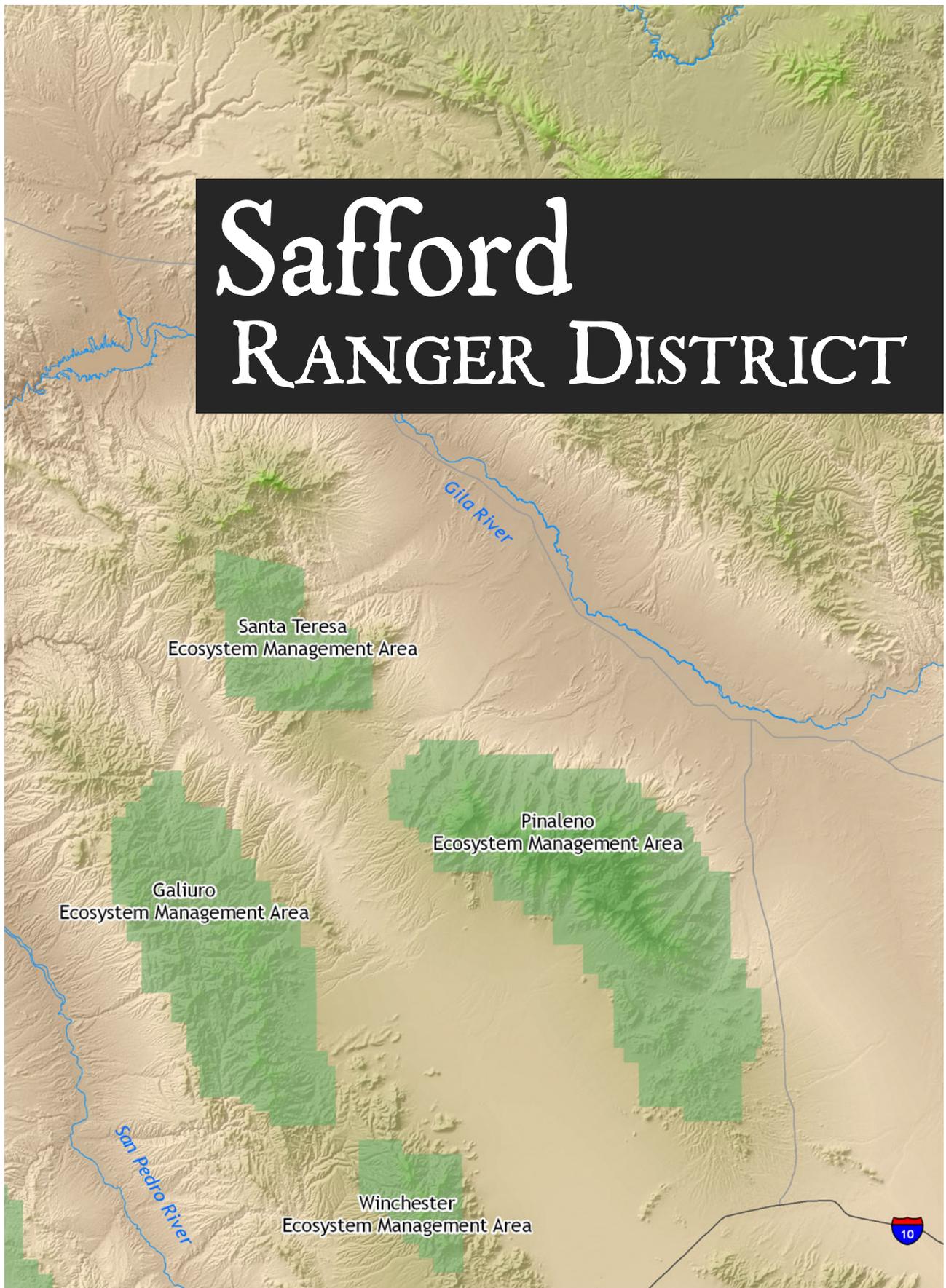


# Safford RANGER DISTRICT







## CHAPTER 7 **Galiuro Ecosystem Management Area**

The Galiuro Mountains are situated in the northeastern portion of the Coronado National Forest. They lie just north of the Winchester Mountains with the San Pedro Valley to their west and the Sulphur Springs Valley to their east. The Galiuro Ecosystem Management Area (EMA) encompasses 134,517 acres of rugged remote land that remains intact and wild. The management area is approximately 23 miles long running northwest to southeast, and 9 miles wide. Elevations range from 4,100 to 7,663 feet at the summit of Bassett Peak. The Galiuro Mountains boast rugged cliffs with brightly colored rocks, and steep rocky and brushy slopes. The Galiuro Wilderness encompasses 76,317 acres of the range. Redfield Canyon Wilderness, managed by the Bureau of Land Management, borders the southern edge of the Galiuro Wilderness creating a contiguous core of protected lands (Figure 7.1).

Recreation in the Galiuro Ecosystem Management Area is relatively light due to its remote location. The area is sparsely roaded and many of the trails that traverse the range are overgrown and require a keen eye to follow.

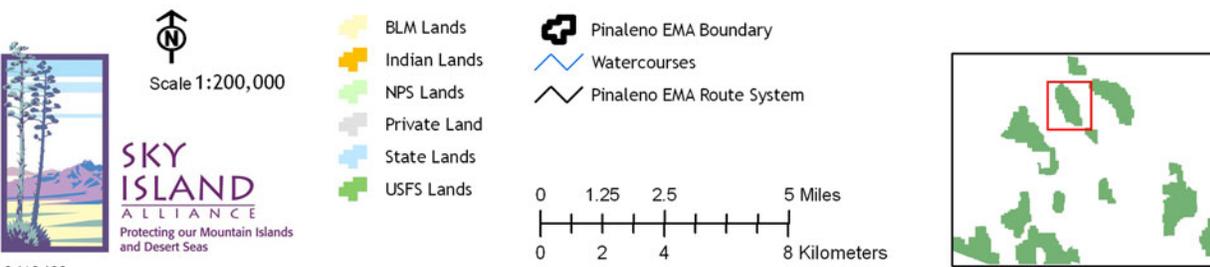
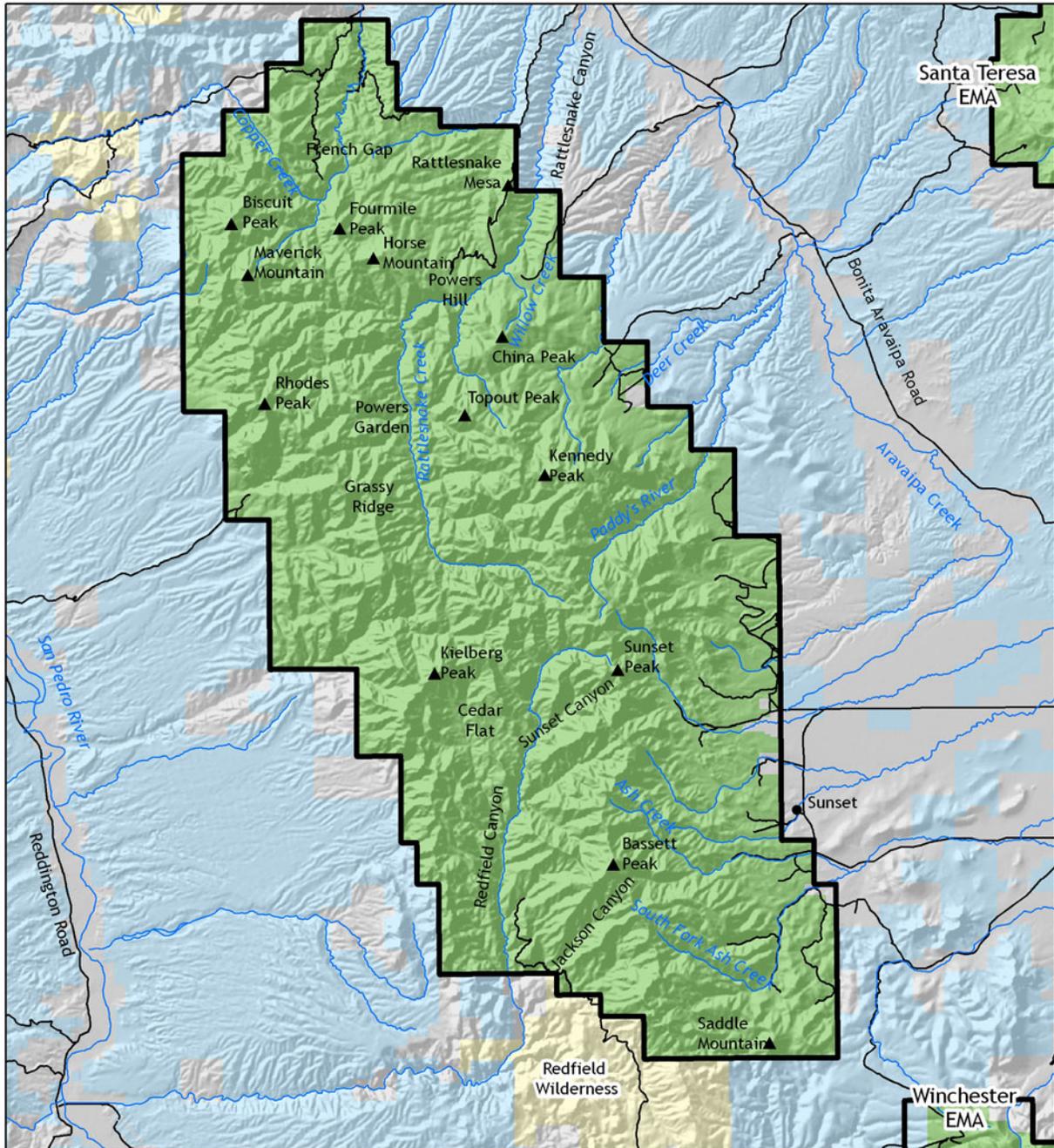
Muleshoe Ranch Preserve, owned by The Nature Conservancy, is nestled in the southern tip of the Galiuro Mountains. Muleshoe Ranch Preserve is part of the Muleshoe Ranch Cooperative Management Area encompassing 49,120 acres of public and private

land jointly managed by The Nature Conservancy, Coronado National Forest and the Bureau of Land Management. The area contains miles of lush riparian habitat that support native fish and at least 180 species of birds.

### **Natural History**

About 25 million years ago a series of eruptions fractured the ground, sending rivers of magma across the landscape and throwing up tall dense columns of ash. Rather than creating lofty cinder cones, these eruptions laid down sheets of andesite and rhyolite, the ash settling and curing under its own weight to become a cap of welded tuff. Millions of years later a process called block faulting would cause these layers to rise and tilt, building a pair of high ridges in the same way many other mountains in the basin and range province were born. Thus the Galiuros took shape, with subsequent years of erosion carving two deep canyons between the ridges — Redfield draining to the south and Rattlesnake to the north — so that today the range appears as a narrow, elongated “H”. The brightly colored rock cliffs and steep slopes in these mountains are a testament to their formation.

The majority of the Galiuros are so steep, rocky, and brushy that travel by foot and horseback is limited to cleared and graded trails. The Galiuros are an excellent destination for backpackers seeking quiet and solitude in the sky islands of the Coronado.



3/13/08

Figure 7.1 Overview Map of Galiuro EMA

Stacked block pinnacles and steep rocky bluffs of Redfield Canyon are a spectacular site. From the heights of grassy ridges one has unobstructed views of the major peaks of the Galiuro Range: Kennedy, Kielberg, Bassett and Biscuit. Water flowing from canyons on the west side of the Galiuros feeds the watershed of the lower San Pedro River. Traveling west from the Galiuros across the San Pedro River Valley, one reaches the Santa Catalina and Rincon Mountains which bound the western side of the valley. This valley and surrounding mountains comprise a large intact natural area that supports the movement of wide-ranging species including mountain lion, bear, coati and others. The San Pedro Watershed supports the highest diversity of vertebrate species in the inland United States along with more than 400 bird species, and 180 species of butterflies.

On the eastern side of the Galiuro range, Paddy's River Canyon, Rattlesnake Canyon and Deer Canyon drain east and north to Aravaipa Creek. Aravaipa Creek cuts through the north end of the Galiuros on the BLM-managed Aravaipa Canyon Wilderness. The creek harbors the best remaining assemblage of desert fishes in Arizona with seven species present including the federally Threatened spikedace and loach minnow. Over 200 species of birds can be found along Aravaipa Creek along with larger mammals and colorful wildflowers. Ash Canyon in the southeastern portion

of the EMA feeds the flatlands of the upper Sulphur Springs Valley.

In lower elevations around the base of the range, the Sonoran desert tortoise can be found. Bears and mountain lions are abundant here and once lived alongside wolves in the Galiuros until sometime in the 1950s, when wolves were extirpated from the area.

Vegetation in the area ranges from semi-desert grasslands to mixed oak woodland, with mixed conifers and aspens at the highest elevations. Over 60% of the National Forest land in the Galiuros is covered by Madrean pine-oak woodland, a vegetative system that has been recognized by Conservation International as a global conservation hotspot.<sup>1</sup>

### **Human Prehistory and History**

Early Spanish maps labeled the Galiuro Mountains the Sierra de San Calistro. The name probably refers to Saint Callistus, a third century pope who gained favor within the church for purchasing and expanding a Christian cemetery on the Via Appia. With the arrival of Anglo settlers the name "Calistro" slowly metamorphosed into Galiuro.

Near the summit of Basset peak, lies the wreckage of a World War II B52 bomber that crashed on a training run in the 1943. The Power Garden area of the range is steeped in human history.

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

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The Galiuro 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 Galiuro Ecosystem Management Area. The Forest Service identified 46

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 due to management issues (Table 7.1).

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 7.2). Although there are many fine variations in plant communities on the Galiuro 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.<sup>2</sup> Figure 7.2 shows the distribution of ecological systems in the Galiuros. Through contact with regional scientists and experts, and other people familiar with the Galiuros, 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 7.3 lists additional species whose needs should be assessed during plan revision.

The Galiuro 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 Apaches ongoing uses of the land are also an important part of the Cultural Heritage of the area (Table 7.4).

**Table 7.1 Species Identified by the Forest Service to Guide Management Decisions**

<b>Amphibians</b>		<b>Mollusks</b>	
<i>Rana chiricahuensis</i>	Chiricahua Leopard Frog	<i>Sonorella galiurensis</i>	Galiuro Talussnail
<i>Rana yavapaiensis</i>	Lowland Leopard Frog	<b>Plants</b>	
<b>Birds</b>		<i>Agastache rupestris</i>	Thread-leaf Giant-hyssop
<i>Meleagris gallopavo mexicana</i>	Gould's Turkey	<i>Arceuthobium blumeri</i>	Southwestern White Pine
<b>Fish</b>			Dwarf-mistletoe
<i>Catostomus clarkii</i>	Desert Sucker	<i>Carex ultra</i>	Cochise Sedge
<i>Catostomus insignis</i>	Desert Sucker	<i>Eriogonum arizonicum</i>	Arizona Wild-buckwheat
<i>Meda fulgida</i>	Spikedace	<i>Hackelia ursina</i>	Chihuahuan Stickseed
<i>Rhinichthys osculus</i>	Speckled Dace	<i>Heuchera glomerulata</i>	Alumroot
<i>Tiaroga (=Rhinichthys) cobitis</i>	Loach Minnow	<i>Penstemon discolor</i>	Catalina Beardtongue
<b>Insects</b>		<i>Perityle dissecta</i>	Slimlobe Rockdaisy
<i>Ophiogomphus arizonicus</i>	Arizona Snaketail	<i>Phlox tenuifolia</i>	Santa Catalina Mountains Phlox
<i>Palaemnema domina</i>	Desert Shadow damsel	<i>Salvia amissa</i>	Catalina Mountain Sage
<b>Mammals</b>		<b>Reptiles</b>	
<i>Idionycteris phyllotis</i>	Allen's Big-eared Bat	<i>Aspidoscelis burti stictogramma</i>	Canyon Spotted Whiptail
<i>Lasiurus blossevillii</i>	Western Red Bat	<i>Gopherus agassizii</i>	Desert Tortoise ("Sonoran" population)
<i>Macrotus californicus</i>	California Leaf-nosed Bat		
<i>Nyctinomops femorosaccus</i>	Pocketed Free-tailed Bat		
<i>Ovis canadensis mexicana</i>	Desert Bighorn Sheep		

The Galiuro EMA 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.

**Table 7.2 Foundations of Native Biological Diversity**

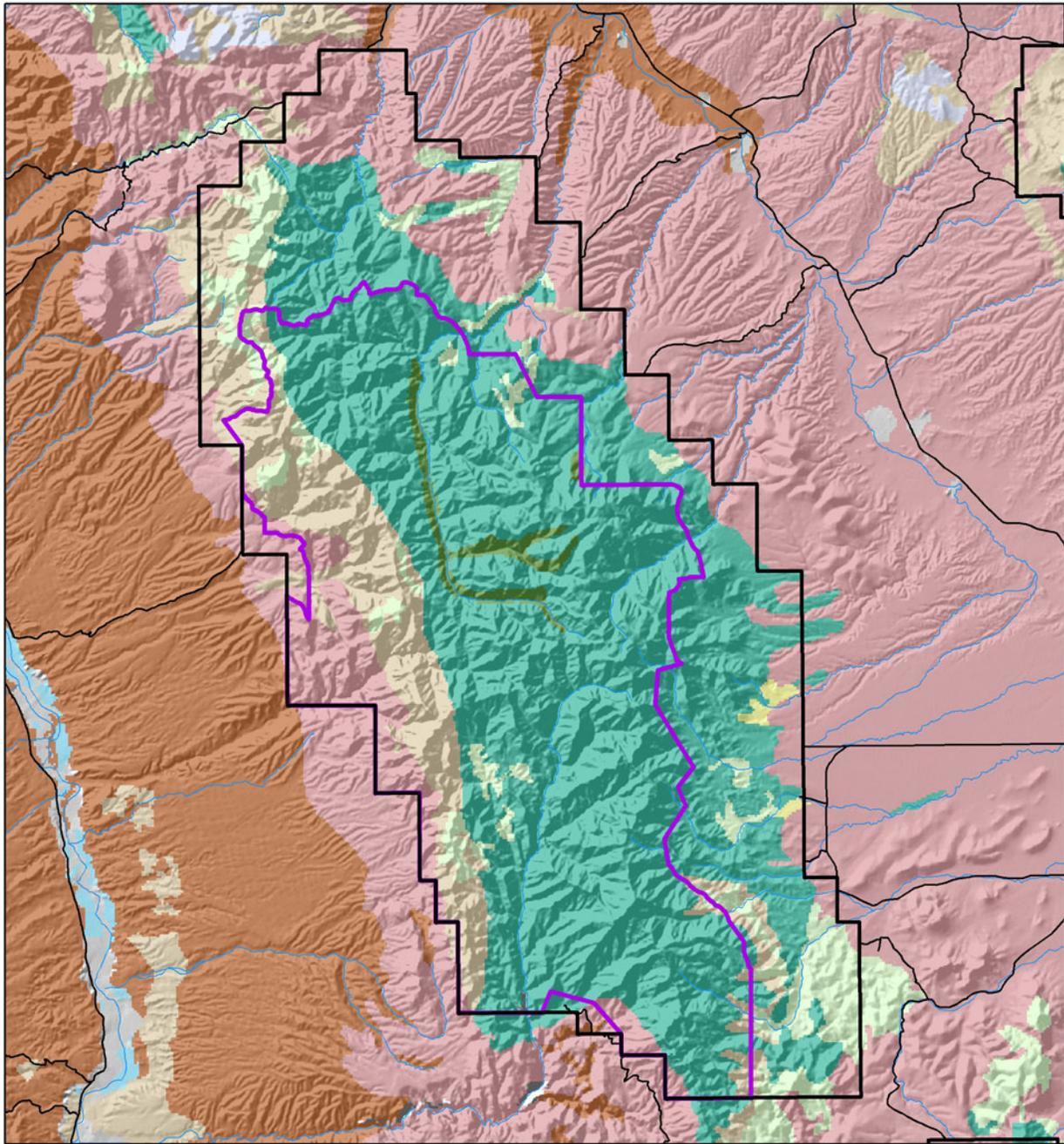
<p><b>“Potential Natural Vegetation Types” (bold) as they correspond with The Nature Conservancy’s “Ecological Systems”</b></p> <hr/> <p><b>Desert Communities</b> Sonoran Paloverde Mixed-Cacti Desert Scrub Mesquite Bosque</p> <p><b>Interior Chaparral</b> Interior Chaparral</p> <p><b>Madrean Encinal Woodland</b> Madrean Encinal</p> <p><b>Madrean Pine-Oak Woodland</b> Madrean Pine-Oak Woodland</p> <p><b>Mixed Conifer Forest</b> Montane Mixed-Conifer Forest</p> <p><b>Semi-desert Grasslands</b> Apachean Grassland and Savannah Apachean Shrubland</p> <p><b>Wetland/Cienega</b> Cienega Playa</p> <p><b>Community</b></p> <hr/> <p>Sacaton Riparian Grassland</p>
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**Table 7.3 Additional Species That Require Special Management Consideration**

<p><b>Amphibians</b> <i>Rana blairi</i></p> <p><b>Birds</b> <i>Aimophila carpalis</i> <i>Asturina nitida maxima</i> <i>Athene cunicularia hypugaea</i> <i>Buteo albonotatus</i> <i>Buteogallus anthracinus</i> <i>Callipepla squamata</i> <i>Coccyzus americanus occidentalis</i> <i>Colaptes chrysoides</i> <i>Dendroica petechia</i> <i>Empidonax traillii extimus</i> <i>Glaucidium brasilianum cactorum</i> <i>Grus Canadensis</i> <i>Pipilo aberti</i></p> <p><b>Fish</b> <i>Agosia chrysogaster</i> <i>Catostomus insignis</i> <i>Cyprinodon macularius macularius</i> <i>Gila intermedia</i> <i>Gila robusta</i></p> <p><b>Insects</b> <i>Abedus herberti</i> <i>Amblyscirtes texanae</i> <i>Atrytonopsis cestus</i> <i>Chiooides catillus albofasciatus</i> <i>Cicindela oregona maricopa</i></p> <p><b>Mammals</b> <i>Myotis velifer</i> <i>Sigmodon ochrognathus</i></p> <p><b>Plants</b> <i>Lupinus lemmonii</i></p>	<p>Plains Leopard Frog</p> <p>Rufous-Winged Sparrow Northern Gray Hawk Burrowing Owl Zone-Tailed Hawk Common Black-Hawk Scaled Quail Western Yellow-Billed Cuckoo Gilded Flicker Yellow Warbler Southwest Willow Flycatcher Cactus Ferruginous Pygmy Owl Sandhill Crane Abert's Towhee</p> <p>Longfin Dace Sonora Sucker Desert Pupfish Gila Chub Roundtail Chub</p> <p>Giant Water Bug Texas Roadside-skipper Cestus Skipper White-striped Longtail Maricopa Tiger Beetle</p> <p>Cave Myotis Bat Yellow-Nosed Cotton Rat</p> <p>Lemmon's Lupine</p>
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**Table 7.4 Elements of Cultural Heritage**

<p>Traditional Western Apache uses of the land</p> <p><b>Other Values</b> Opportunities for quiet and solitude Opportunities for primitive recreation</p>
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|--|--|--|
|  Pinaleno EMA       |  Apachean Grassland and Savanna |  Madrean Oak-Pine Woodland                  |
|  Galiuro Wilderness |  Apachean Riparian Grassland    |  Pinyon-Juniper Woodland                    |
|  Watercourses       |  Apachean Shrubland             |  Montane Mixed-Conifer Woodland             |
|  |  Interior Chaparral             |  Madrean Encinal                            |
|  |  |  Sonoran Paloverde Mixed-Cacti Desert Scrub |

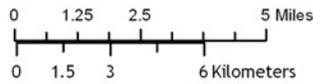


Figure 7.2 Ecological Systems of the Galiuro EMA

## Desired Conditions

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★ The Galiuro Ecosystem Management Area (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 Winchester EMA and the following: Santa Teresa EMA, Pinalaño EMA, Winchester EMA, Aravaipa Canyon wilderness, Santa Catalina EMA and wildlands to the north.

★ Development in lands surrounding the Galiuro EMA does not prevent the continued use of prescribed fire and wildland fire as management tools.

★ Vegetative communities in the Galiuro EMA experience pre-fire suppression burn cycles. Burn cycles restore a broad mosaic pattern of different habitat types, as well as historical plant diversity. High-intensity stand-replacing fires occur only at pre-fire suppression intervals because the composition of fire-adapted vegetation types.

## Conservation Assets

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Conservation assets work on behalf of Forest health on the Galiuro EMA. 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 Galiuro Ecosystem Management Area.

### **Location of Galiuro Ecosystem Management Area**

The Galiuro EMA is located in close proximity to the neighboring Winchester, Santa Teresa, and Pinalaño EMAs, and the Aravaipa Wilderness. The Galiuro EMA is bounded by the Redfield Canyon Wilderness (managed by the BLM) on the south and by significant tracts of state land on the west and east. The Galiuro EMA is currently in a landscape that maintains wildlife linkages to neighboring surrounding wildlands. Due to its remote location and surrounding land ownership, the EMA will be somewhat buffered from continued development.

### **Muleshoe Ranch Cooperative Management Area**

The Muleshoe Ranch Cooperative Management Area consists of 49,120 acres of public and private land that is cooperatively managed by The Nature Conservancy, Coronado National Forest and The Bureau of Land Management. Managers cooperate to protect the unique ecosystems found in the area and to protect endangered species and their habitats. The management area encompasses most of the watershed that feeds seven perennial streams containing some of the best aquatic habitat in southeast Arizona.

### **Significant Opportunity for Wildland Fire Use**

The remote nature of the Galiuro EMA, along with the rural character of the surrounding landscape, offers significant opportunity for wildland fire use. Managing naturally-ignited fire to burn in so that it fulfills its natural role in the ecosystem will benefit the natural resources of the Galiuro EMA. 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.

## 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 Galiuros that are not addressed in the Forest Plan, or have not been adequately dealt with 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 Galiuro Ecosystem Management Area.

### ADJACENT LAND USES

The Galiuro Ecosystem Management Area is located in close proximity to the neighboring Winchester, Santa Teresa and Pinaleno Mountains along with the Aravaipa Wilderness. The Galiuros currently remain connected to these surrounding mountain ranges in a way that allows for the movement of wide ranging species between the ranges and natural areas. Proposals for an Interstate 10 bypass route have explored the San Pedro Valley and Aravaipa Canyon area as possible route locations.

Both of these locations would severely impact wildlife linkages between the Galiuros and surrounding lands. Although the Galiuros remain relatively remote, the possibility of exurban development in surrounding valleys exists.

Resources likely affected by land development adjacent to the EMA include: geological features, 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, jaguar, Mexican spotted owl, Coues' white-tailed deer); wide-ranging species of terrestrial animals: mountain lion, jaguar, ocelot, black bear, coati, deer; prehistoric and historical sites, structures, and artifacts.

### EXTRACTIVE USERS AND USES

#### Mining

A 1993 Bureau of Mines report stated no mineral resources could be identified in the Galiuro Mountain Unit. (It also stated mineral deposits similar to those mined in Copper Creek district may be present in the Forest).<sup>3</sup>

## Recommended Objectives and Management Actions

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The Galiuro Ecosystem Management Area (EMA) offers great opportunities for primitive recreation where quiet and solitude can be experienced. This 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 Galiuro EMA. To confront threats and capitalize on conservation assets, we recommend the following objectives and management actions to 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 Galiuro EMA and the Pinaleno EMA, the Santa Teresa EMA, the Winchester EMA, the Santa Catalina EMA and other surrounding natural areas.

### Actions

*Work with the Arizona Department of Transportation and both Graham and Pinal County in development planning to address wildlife corridors connecting the Galiuros to surrounding natural lands.*

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

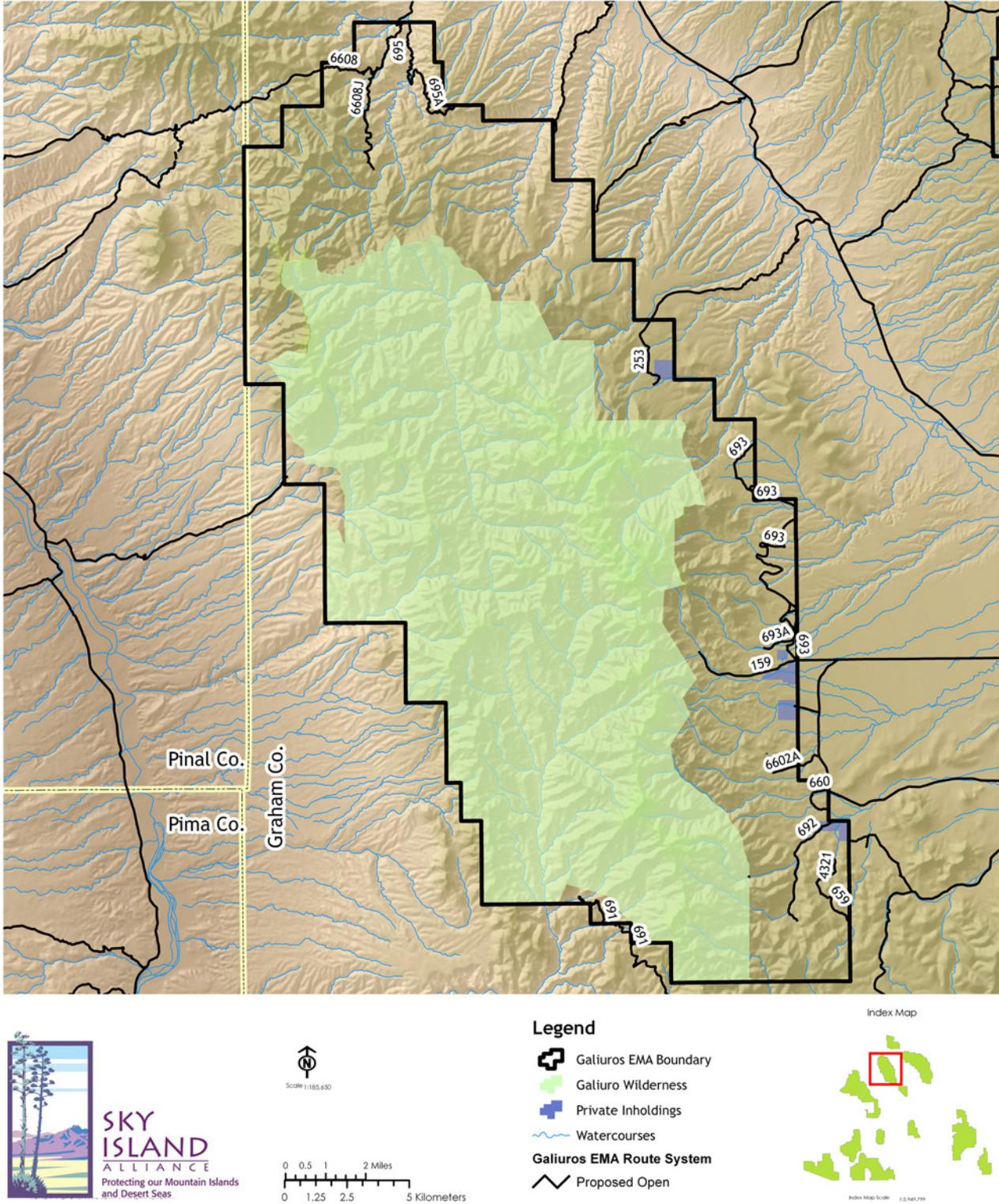


Figure 7.3 Travel Management Plan and Route Recommendations for the Galiuro EMA

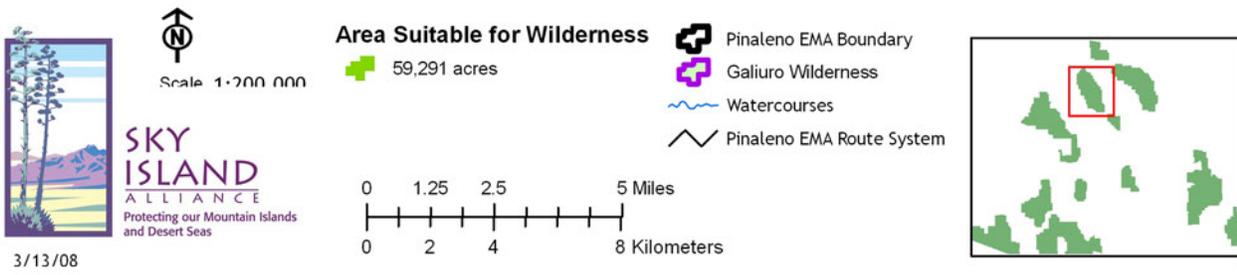
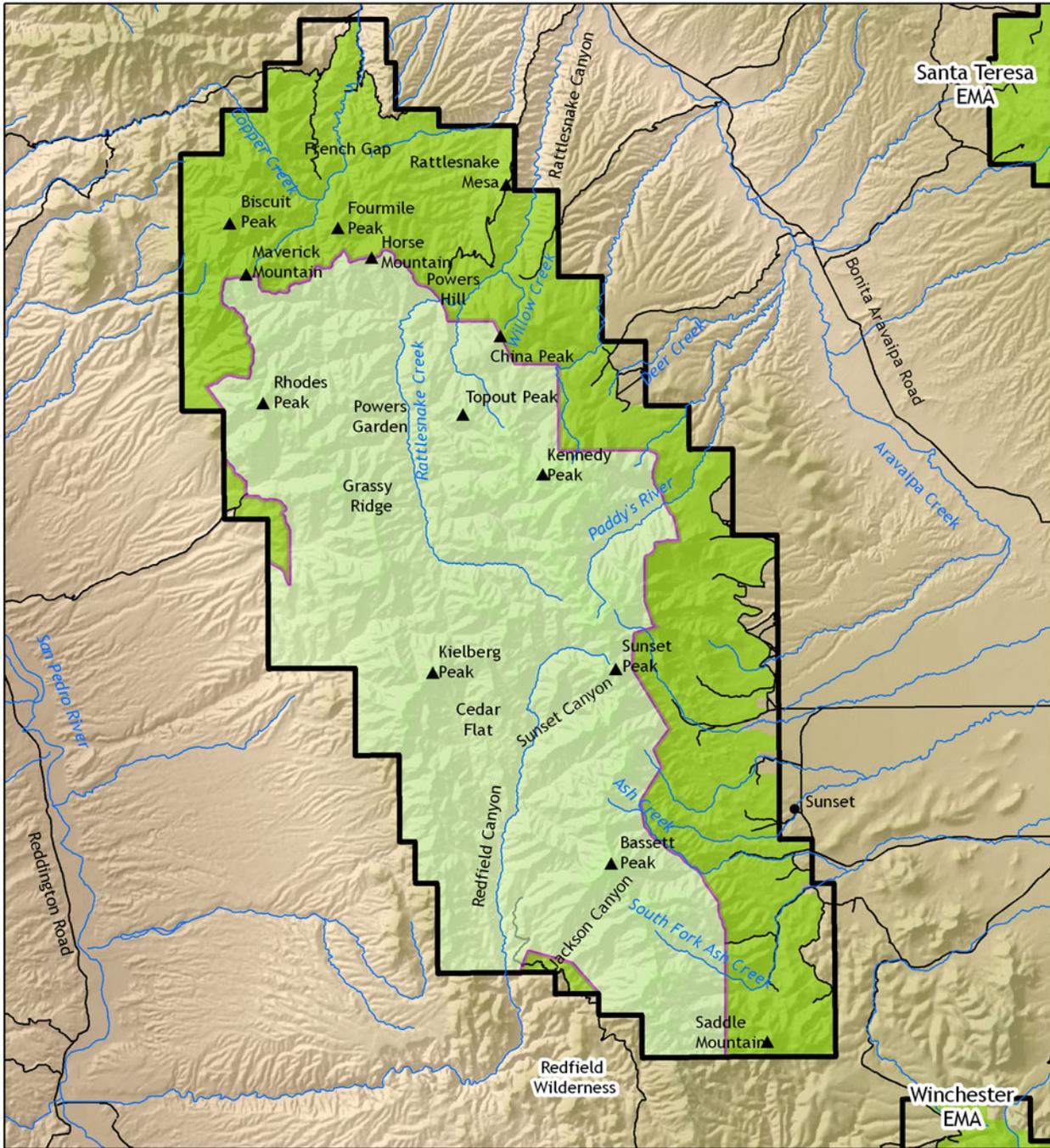


Figure 7.4 Area Suitable for Wilderness and to be Managed for Wilderness Characteristics

## Ecological Restoration

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### Objectives

Continue to 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 Galiuro EMA.

### Actions

*Utilize wildland fire use throughout the Galiuro EMA.*

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

## Roads/Transportation System

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### Objectives

Maintain the rugged nature and wilderness characteristics of the Galiuro EMA.

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

### Actions

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

*See Figure 7.3 for the proposed Transportation System for the EMA*

## Special Management Areas

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### Objectives

Maintain the intact nature, and unfragmented habitat, of the Galiuro EMA.

Maintain areas on the EMA where quiet and solitude can be experienced.

### Actions

*Manage 59,281 acres with outstanding wilderness characteristics to maintain their wilderness suitability. (See Figure 7.4 for a map of the existing Galiuro Wilderness and area proposed to be managed for wilderness suitability.)*

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<sup>1</sup> Mittermeier, R.A., P. Robles Gil, M. Hoffmann, J. Pilgrim, T. Brooks, C. Goettsch Mittermeier, J. Lamoreux, G.A.B. Da Fonseca. 2004. Hotspots Revisited: Earth's Biologically Richest and Most Endangered Terrestrial Ecoregions. Prepared by CEMEX, Conservation International and Agrupación Sierra Madre.

<sup>2</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>3</sup> United States Bureau of Mines. 199e. Mineral Appraisal of Coronado National Forest, Part 9: Galiuro Mountains Unit. Intermountain Field Operations, Denver, Colorado. 11 p + Appendices.