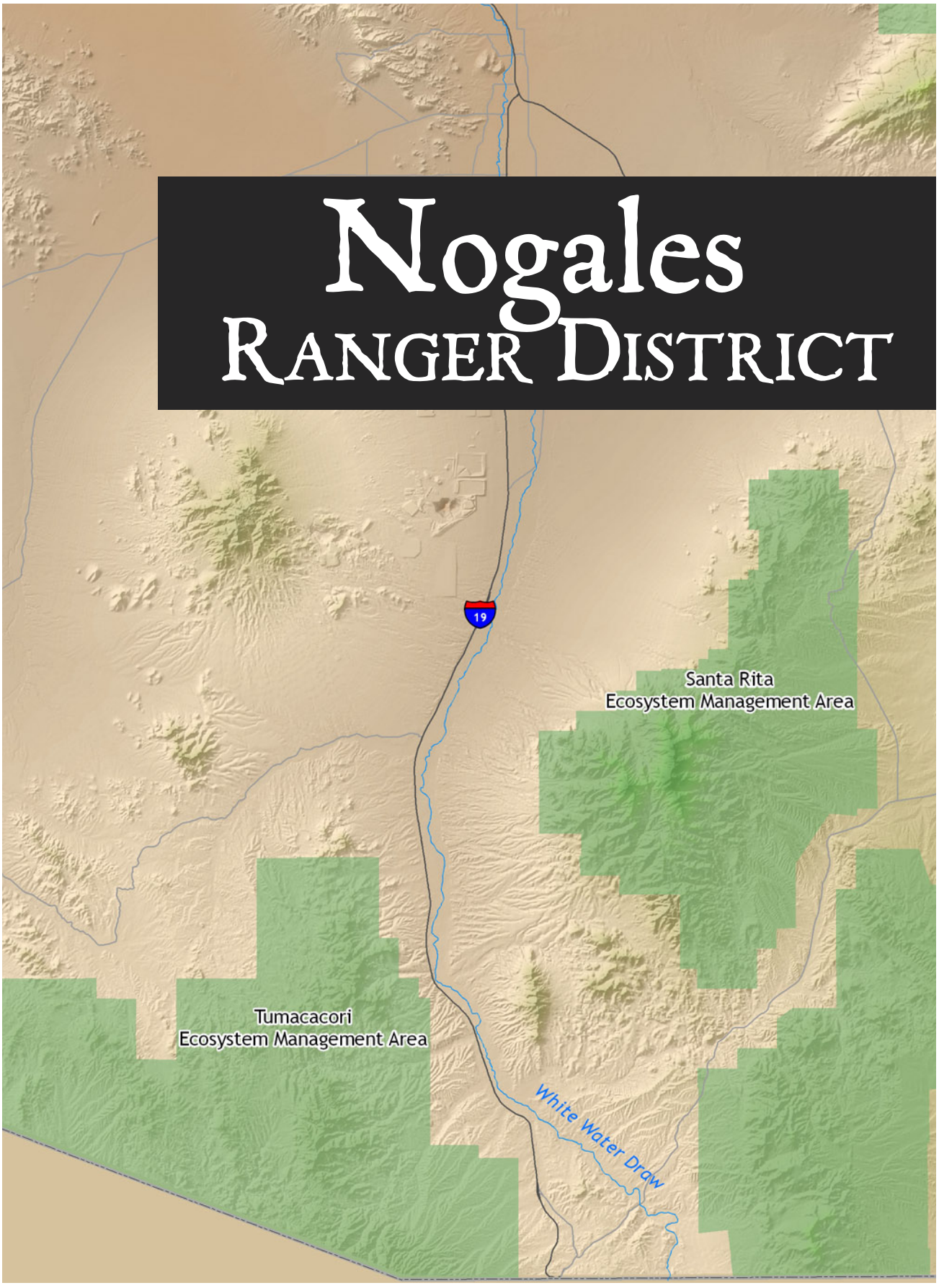
Nogales
Ranger District
19
Santa Rita
Ecosystem Management Area
Tumacacori
Ecosystem Management Area
White Water Draw

CHAPTER 5 Santa Rita Ecosystem Management Area

The Santa Rita Mountains harbor densely wooded, well-watered canyons and boast steep rugged ridgelines and hillsides. Located in the western portion of the Coronado National Forest, the Santa Rita Ecosystem Management Area (EMA) encompasses 148,425 acres with elevations ranging from 3,600 feet to 9,450 feet at the summit of Mt. Wrightson. The northwestern side of the Management Area is bordered by Santa Rita Experimental Range, 80,000 acres of low elevation rangeland managed by the University of Arizona. The area is used to conduct rangeland studies on recovery from drought and sustainable grazing practices among other things. Much of the northeastern and northwestern portions of the area is bordered by state land, while most of the southern portions are bordered by private land. Rosemont Ranch, a key parcel of private land bordering the northwestern side of the range, was purchased in 2005 by August Resource, a small Canadian mining company. As of 2008 this ranch is the proposed site of an open pit copper mine that will utilize a portion of Forest lands in the Santa Rita Ecosystem Management Area.

The Santa Rita Mountains have long been a cherished recreation destination for Tucsonans and other southern Arizona inhabitants that engage in hiking, bird watching, mountain biking, hunting, camping and a variety of other uses. The Santa Ritas are one of the big three ecotourism destinations in the region with Madera Canyon drawing birders from around the world. Gardner Canyon, located on the east side of the mountain range, is also a popular recreation destination offering uncrowded hiking access to Mt. Wrightson Wilderness, a variety of wildlife, and stunning views. Located only 30 miles south of the town of Tucson, Arizona, the distinct ridgeline of these mountains and the prominent peak of Mount Wrightson are clearly visible from the city. Traveling south on Interstate 19, one passes through the retirement community of Green Valley located near the western side of the range. The scenic byway of State Highway 83 travels along the eastern side of the range through the communities of Patagonia, and Sonoita. The southern tip of the range is only a few miles for the U.S.-Mexico border and the border town of Nogales.

Waters running west off the Santa Rita crest pour into the Santa Cruz watershed and feed washes running through the Santa Rita Experimental Range and into the community of Corona de Tucson. On the eastside of the range, Papago Canyon connects to Davidson Canyon, a critical wildlife linkage for species moving between the Santa Rita Mountains, Cienega Creek and the Rincon and Catalina Mountains. The eastern edge of the Santa Rita management area borders the Sonoita Valley, a relatively intact grassland. Waters running off from the Santa Ritas feed Cienega Creek as it runs through the heart of Las Cienegas National Conservation Area. Sonoita Creek is fed by eastern and southern flanks of the mountains. The

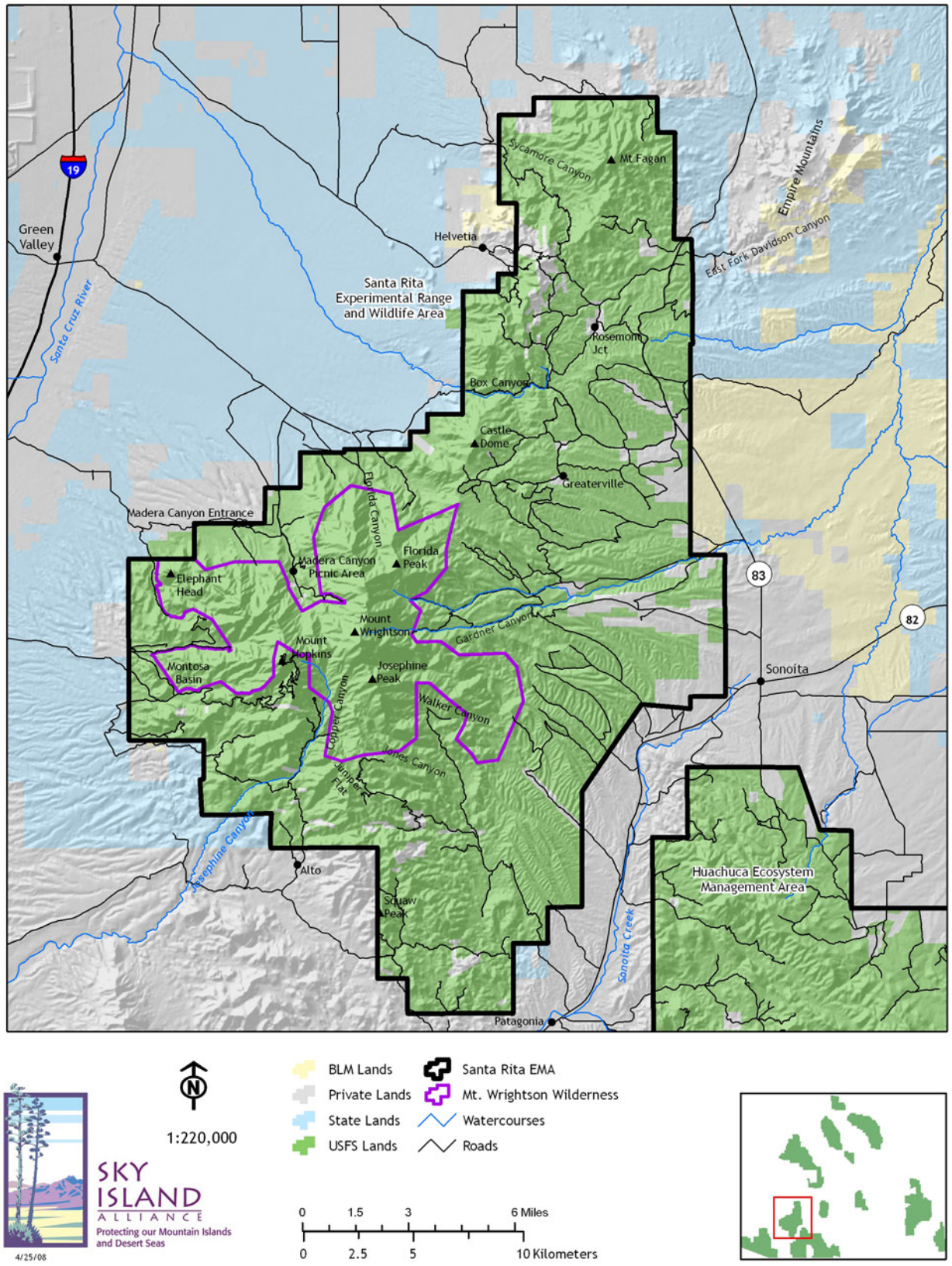

Figure 5.1 **Overview of the Santa Rita EMA**

Patagonia-Sonoita Creek Preserve also encompasses riparian habitat fed in part by runoff from the Santa Ritas. Owned by The Nature Conservancy, the preserve is home to rare fish, frogs and plants, and over 200 species of birds have been recorded there.

Natural History

The Santa Rita Mountains are renowned for the occurrence of a number of Mexican bird species associated with the Sierra Madre Occidental, and whose range in the U.S. is quite limited. Deep and densely wooded Madera Canyon on the northwestern flanks of the Santa Rita Mountains harbors springs and perennial pools, providing outstanding habitat for over 250 species of birds along with rare amphibians. sky island "specialties" including Elegant Trogon and Yellow-eyed Junco can be found in the oak woodlands and pine-oak forests of the upper canyon, along with occasional rarities such as Flame-colored Tanager and Aztec thrush. Between 1,000 to 1,500 varieties of plants can be found in the Canyon contributing to the great diversity of habitats and animal life. To the north of Madera Canyon lies Florida Wash, also known for its excellent bird habitat. Neotropical Varied Buntings can be spotted along the wash and nest in the area. Temporal Gulch in the southern Santa Rita Mountains supports a native assemblage of longfin dace, speckled dace and desert sucker. Cassin and Botteri sparrows also nest in the area in semi-desert grasslands. Temporal Gulch is a tributary to Sonoita Creek and a surface water connection between the two exits often enough to provide for genetic interchange and recolonization of fish.[1] On the west side of the range, desert grassland communities are located in Agua Caliente Canyon and Devil's Cashbox Canyon.

Davidson Canyon at the north end of the range is one of the most important wildlife corridors between the Santa Rita Mountains and the Rincon, Santa Catalina and Galiuro Mountains located to the north. A variety of wide-ranging animals including mountain lions, bears, and coatimundi utilize this essential linkage.

Human Prehistory and History

Humans have been an important component of the sky island landscape for at least 10,000 years and the Santa Rita Mountains are rich in human history and pre-history. They have been home to Apaches, Mexican campesinos, Anglo ranchers, miners, loggers, mission dwellers, and cavalrymen. Prehistoric cultures hunted Pleistocene mammoths in the San Pedro Valley east of the Santa Ritas then moved to hunting small game and gathering food plants as the climate changed. The Santa Cruz Valley just west of the Santa Ritas became the site of cultivation of domestic plants. Rock pile sites in the mountains are potential remnants of dry farming, water capture methods used by early agricultural cultures. Around A.D. 550 to 750 Hohokam styles of architecture, graphic symbols, and burial practices spread into the Santa Cruz Valley and surrounding mountains. A Hohokam burial site found to contain 75 individuals, and funerary objects such as ceramic bowls, jars, shell, bone and turquoise ornaments was excavated in the Santa Ritas.[2] Hohokam village sites exist in the Rosemont area and on the bajada that stretches out below Madera Canyon. Fourteen study sites in the area have revealed Hohokam presence from approximately 500 to 1225 A.D.

Around A.D. 1400[2] the Hohokam culture in the Santa Cruz River Valley collapsed due in part to changing environmental conditions. Pima tribes (Akimel O'odham) lived in the San Pedro Valley and the area of present-day Las Cienegas, and utilized the Santa Rita Mountains until they were eventually displaced by Apache. They were known to have lived in the area of Rosemont from approximately 1650 to 1780 A.D. These people were still living in the area when Apaches arrived from the north and began raiding villages, and Spaniards arrived from the south and began establishing cattle ranches.

By the 1880s the Santa Rita Mountains had been extensively prospected and many mines had been established. The western side of the Santa Ritas was the location of a mine run by the Santa Rita Silver Mining Company. The Greaterville area at the eastern foot of the range was the site of a number of Gold Placers. This area proved to be one of the largest and richest placer grounds in southern Arizona and a number of mining camps sprang up in the area. Gardener Canyon was the nearest source of water, a necessity for placer mining, and when runoff dissipated in the canyon, miners bought water that had been packed in on burros. By 1881 much of the readily accessible gold in the area had been extracted and mining began to cease in the area. At the northern end of the Santa Ritas, the Helvetia and Rosemont mining districts where the site of a number of boom and bust copper mining operations. Mining claims had been staked as early as 1879 with major copper

production occurring between 1915 and 1918. During this time period the mining camp of New Rosemont grew to two hundred inhabitants before mining operations ceased when copper prices plummeted in 1921.[3]

Over 100 years ago, Madera Canyon was the site of extensive logging that provided timber to the city of Tucson. The area was the site of the first sawmill in Arizona run by Bill Kirkland in 1857. Madera means lumber, or wood in Spanish. The value of Madera Canyon as wildlife habitat, and a cool refuge from desert heat quickly replaced its value for timber harvest and today the Canyon remains a popular recreational destination.

Whipple Observatory is located on Mount Hopkins near the middle of the range. This area extending through the north end of the range offers some of the best dark sky astronomy conditions in the region.

Elements of Biological Diversity and Cultural Heritage

The Santa Rita 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 Rita Ecosystem Management Area. In this management area, the Forest Service identified 118 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 5.1). 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 5.2). Although there are many fine variations in plant communities on the Santa Rita 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.[4] Figure 5.2 shows the distribution of ecological systems in the Santa Ritas. Through contact with regional scientists and experts, and other people familiar with the Santa Ritas, we identified ecological systems, physiographic features, additional species and cultural resources that should also be considered in the Forest Plan revision.

The Santa Rita 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 5.4).

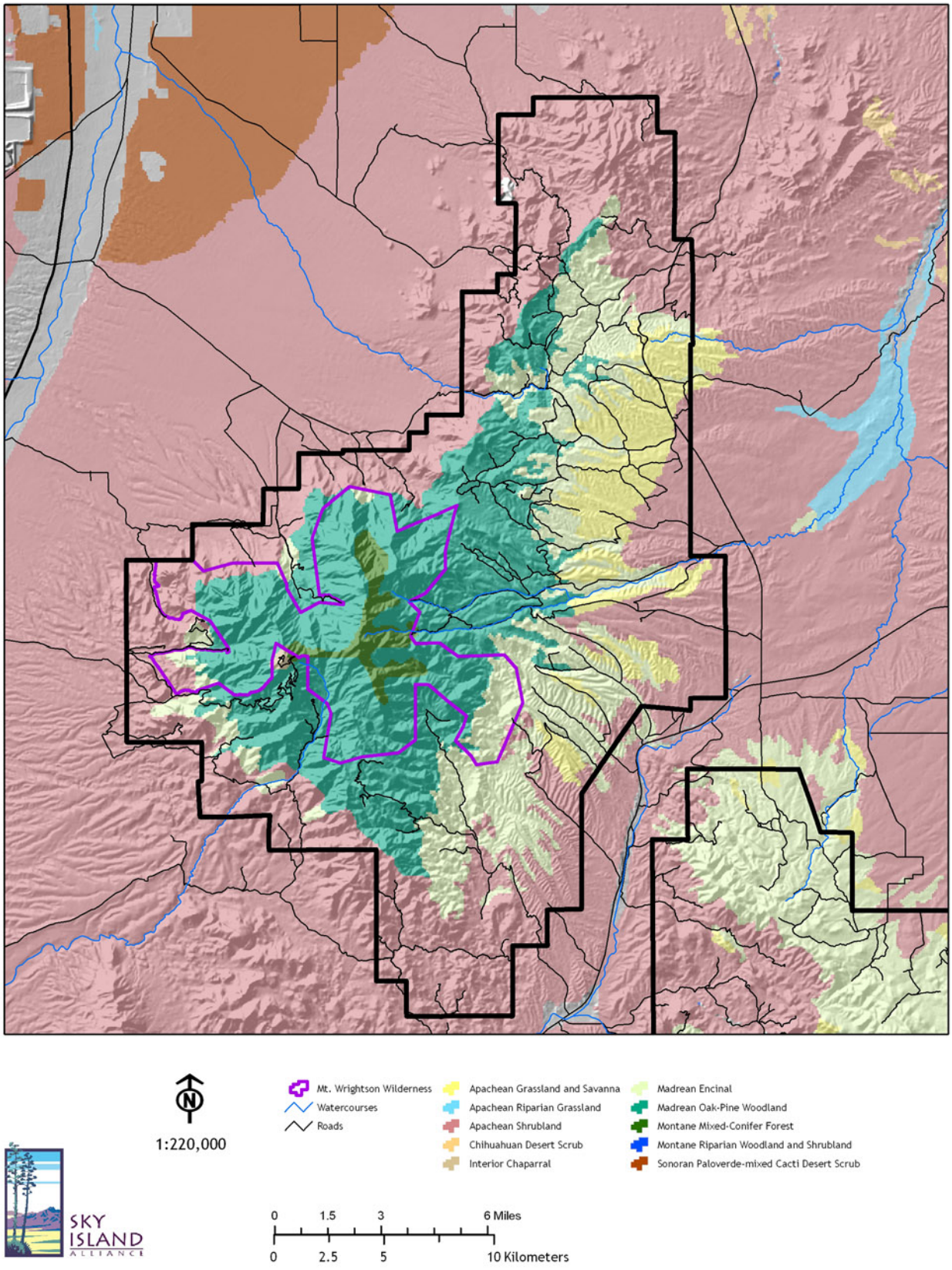

Figure 5.2 **Ecological Systems of the Santa Rita EMA**

Table 5.1 **Species Identified by the Forest Service to Guide Management Decisions**

Amphibians	
Eleutherodactulus augusti cactorum	Western Barking Frog
Rana chiricahuensis	Chiricahua Leopard Frog
Rana tarahumarae	Tarahumara Frog
Birds	
Ammodramus savannarum ammolegus	Arizona Grasshopper Sparrow
Coccyzus americanus occidentalis	Western Yellow-billed Cuckoo
Cyrtonix montezumae	Montezuma Quail
Empidonax fulvifrons pygmaeus	Northern Buff-breasted Flycatcher
Glaucidium brasilianum cactorum	Cactus Ferruginous Pygmy-owl
Meleagris gallopavo mexicana	Gould's Turkey
Polioptilla nigriceps	Black-capped Gnatcatcher
Trogon elegans	Elegant Trogon
Chelicerates	
Stygobromus arizonensis	Arizona Cave Amphipod
Fish	
Agosia chrysogaster	Longfin Dace
Catostomus clarkii	Desert Sucker
Catostomus insignis	Sonora Sucker
Insects	
Adopaeoides prittwitzi	Sunrise Skipper
Heterelmis stephani	Stephan's Heterelmis Riffle
Oligocentria delicata	A Notodontid Moth
Ophiogomphus arizonicus	Arizona Snaketail
Speyeria nokomis coerulescens	Bluish Fritillary
Sphingicampa raspa	A Royal Moth
Mammals	
Choeronycteris mexicana	Mexican Long-tongued Bat
Lasiurus blossevillii	Western Red Bat
Macrotus californicus	California Leaf-nosed Bat
Nyctinomops femorosaccus	Pocketed Free-tailed Bat
Panthera onca	Jaguar
Sciurus arizonensis	Arizona Gray Squirrel
Sorex arizonae	Arizona Shrew
Thomomys umbrinus intermedius	Southern Pocket Gopher
Mollusks	
Sonorella clappi	Madera Talussnail
Plants: Non-vascular	
Heterodermia appalachensis	
Leptogium rugosum	Rugos skin lichen
Omphalora arizonica	
Plants: Vascular	
Abutilon parishii	Pima Indian Mallow
Acacia millefolia	Milfoil Acacia
Agastache rupestris	Thread-leaf Giant-hyssop
Agave parviflora ssp. *parviflora*	
Amoreuxia gonzalezii	Santa Rita Yellowshow
Arabis tricornuta	Rincon Mountain Rockcress
Asclepias lemmonii	Lemmon Milkweed
Ayenia truncata (= A. glabra)	Ayenia
Boerhavia megaptera	Tucson Mountain Spiderling
Bouteloua eludens	Santa Rita Grama
Bouteloua parryi	Parry's Grama
Carex ultra	Cochise Sedge
Castilleja nervata	Trans-Pecos Indian Paintbrush
Conioselinum mexicanum	Mexican Hemlock-parsley
Coryphantha scheeri var. *robustispina*	Pima Pineapple Cactus
Delphinium scopulorum	Rocky Mountain Larkspur
Drymaria effusa var. *effusa*	Pinewood Drymary
Erigeron arisolius	Arid Throne Fleabane
Erigeron lemmonii	Lemmon's Fleabane
Erigeron pringlei	Pringle's Fleabane
Eryngium sparganophyllum	Arizona Eryngo
Escobaria vivipara var. *bisbeeana*	Bisbee's Pincushion Cactus
Fraxinus papillosa	Chihuahua Ash
Hackelia ursina	Chihuahuan Stickseed
Heterotheca rutteri	Rutter's Golden-aster
Hexalectris revoluta	Chisos Coralroot
Hexalectris spicata var. *arizonica*	Crested Coralroot
Hymenoxys quinquesquamata	Rincon Bitterweed
Ipomoea plummerae var. *cuneifolia*	Huachuca Mountain Morning-glory
Ipomoea tenuiloba var. *lemmonii*	Lemmon's Morning-glory
Ipomoea thurberi	Thurber's Morning-glory
Laennecia eriophylla	Cochise Woolwort
Lilium parryi	Lemon Lily
Lupinus huachucanus	Huachuca Mountain Lupine
Macromeria viridiflora var. *thurberi*	Giant-trumpets
Macromeria viridiflora var. *viridiflora*	Giant-trumpets
Malacothrix stebbinsii	Stebbins Desert-dandelion
Mammillaria grahamii var. *oliviae*	
Mammillaria heyderi var. *macdougalii*	Little Nipple Cactus
Mammillaria wrightii var. *wrightii*	Wright Fishhook Cactus
Manihot davisiae	Arizona Manihot
Margaranthus solanaceus	Netted Globeberry
Mimulus dentilobus	Southwest Monkeyflower
Muhlenbergia elongata (=M. xerophila)	Sycamore Muhly
Muhlenbergia palmeri (=M. dubioides)	Southwestern Muhly
Opuntia phaeacsntha var. laevis	New Mexico Prickly-pear
Paspalum virletii	Virlet's Paspalum

continued

Table 5.1 **Species Identified by the Forest Service to Guide Management Decisions** *continued*

Pectis imberbis	Beardless Chinch Weed
Penstemon superbus	Superb Beardtongue
Perityle dissecta	Slimlobe Rockdaisy
Phaseolus supinus	Supine Bean
Phoradendron bolleanum ssp. *pauciflorum*	Rough Mistletoe
Plagiobothrys pringlei	Pringle's Popcorn-flower
Rhamnus crocea ssp. *pilosa*	Redberry Buckthorn
Roldana hartwegii (=Senecio hartwegii, with *syn = S. seemannii, S. carlomasonii,* & *R. carlomasonii)*	Seemann (Hartweg's) Groundsel
Samolus vagans	Chiricahua Mountain Brookweed
Scutellaria tessellata	Huachuca Mountains Skullcap
Senecio multidentatus var. huachucanus	Huachuca Groundsel
Sisyrinchium cernuum	Nodding Blue-eyed Grass
Viguiera dentata var. *lancifolia*	Sunflower Golden-eye
Woodsia cochisensis	Cochise Woodsia
Reptiles	
Aspidoscelis burti stictogramma	Canyon Spotted Whiptail
Crotalus pricei	Twin-spotted Rattlesnake
Crotalus w. willardi	Arizona Ridge-nosed Rattlesnake
Sceloporus slevini	Slevin's Bunchgrass Lizard
Tantilla wilcoxi	Chihuahuan Black-headed Snake
Thamnophis eques megalops	Northern Mexican Gartersnake

Table 5.2 **Foundations of Native Biological Diversity**

"Potential Natural Vegetation Types" (bold) as they correspond with The Nature Conservancy's "Ecological Systems"

Desert Communities
Chihuahuan Desert Scrub
Sonoran Paloverde Mixed-Cacti Desert Scrub

Interior Chaparral
Interior Chaparral

Madrean Encinal Woodlands
Madrean Encinal

Madrean Pine-Oak Woodland
Madrean Oak-Pine Woodland

Mixed Broadleaf Deciduous Riparian Forest
Montane Riparian Woodland and Shrubland

Mixed Conifer Forest
Montane Mixed-Conifer Forest

Semi-desert grasslands
Apachean Grassland and Savannah
Apachean Shrubland
Apachean Riparian Grassland

Wetland/Cienega
Cienega

Physiographic Features

Limestone and Rhyolite Outcroppings

Community

Sacaton Riparian Grassland

Table 5.3 **Additional Species that Require Special Management Consideration**

Amphibians	
Rana yavapaiensis	Lowland Leopard Frog
Birds	
Aimophila botterii	Botteri's Sparrow
Aimophila carpalis	Rufous-winged Sparrow
Aimophila cassinii	Cassin's Sparrow
Amazilia beryllina	Berylline Hummingbird
Ammodramus bairdii	Baird's Sparrow
Asturina nitida maxima	Northern Gray Hawk
Athene cunicularia hypugaea	Burrowing Owl
Buteo albonotatus	Zone-Tailed Hawk
Buteogallus anthracinus	Common Black-Hawk
Callipepla squamata	Scaled Quail
Camptostoma imberbe	Northern Beardless-Tyrannulet
Ceryle alcyon	Belted Kingfisher
Colaptes chrysoides	Gilded Flicker
Hylocharis leucotis	White-eared Hummingbird
Megascops trichopsis	Whiskered Screech Owl
Pipilo aberti	Abert's Towhee
Progne subis	Purple Martin
Vermivora luciae	Lucy's Warbler
Vireo bellii	Bell's Vireo
Fish	
Gila intermedia	Gila Chub
Poeciliopsis occidentalis occidentalis	Gila Topminnow Infraspecific.
Insects	
Abedus herberti	Giant Water Bug
Adopaeoides prittwitzi	Sunrise Skipper
Ancyloxypha arene	Tropical Least Skipper
Calephelis arizonensis	Arizona Metalmark
Tuberochernes ubicki	A Cave Obligate Pseudoscorpion
Mammals	
Corynorhinus townsendii pallescens	Pale Lump-nosed Bat
Cynomys ludovicianus	Black-Tailed Prairie Dog
Myotis ciliolabrum	Western Small-Footed Myotis Bat
Myotis thysanodes	Fringed Myotis Bat
Myotis velifer	Cave Myotis Bat
Peromyscus merriami	Mesquite Mouse
Sigmodon ochrognathus	Yellow-Nosed Cotton Rat
Plants	
Amsonia grandiflora	Arizona Slimpod
Asclepias uncialis	Greene Milkweed
Astragalus hypoxylus	Huachuca Milkvetch
Browallia eludens	Elusive New Browallia Species
Dryopteris patula var. *rossii*	Mexican Shield Fern
Echinomastus erectocentrus var. *erectocentrus*	Needle-spined Pineapple Cactus
Euphorbian macropus	Woodland Spurge
Graptopetalum bartramii	Patagonia Mountain Leather-Petal
Hexalectris revoluta	Chisos Coral-Root
Hieracium pringlei	Pringle's Hawkweed
Hieracium rusbyi	Rusby's Hawkweed
Lilaeopsis schaffneriana var. *recurva*	Affolter
Metastelma mexicanum	Norrowleaf Or Wiggin's Swallow Wort
Rumex orthoneurus	Bloomer's Dock
Senecio huachucanus	Huachuca Groundsel
Spiranthes delitescens	Canelo Hills Ladies' Tresses Orchid
Talinum humile	Pinos Altos Mountains Flame Flower
Talinum marginatum	Tepic Flame Flower
Reptiles	
Cnemidophorus burti stictogrammus	Canyon Spotted Whiptail
Coralus lepidus	Mountain Skink
Eumeces callicephalus	Rock Rattlesnake
Gonyosoma oxycephela	Green Rat Snake
Lampropeltis pyromelana	Mountain Kingsnake
Phrynosoma cornutum	Texas Horned Lizard

Table 5.4 **Elements of Cultural Heritage**

Pre-Historic and Historic Elements
Physical sites utilized by Native Americans
Mines, camps, mills and mining towns in Rosemont Valley
Other Values
Opportunities for quiet and solitude
Opportunities for primitive recreation

Desired Conditions

✶ The Santa Rita 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 Santa Rita EMA and the following: Tumacacori EMA, Huachuca EMA, Santa Catalina EMA, Dragoon EMA, the Cienega Creek corridor and other surrounding wildlands.

✶ Development around the Santa Rita EMA does not prevent the continued use of prescribed fire and wildland fire as management tools.

✶ The Santa Rita EMA contributes to the health and recharge of the Cienega Creek watershed.

✶ Human uses on the Santa Rita EMA are in both short-term and long-term harmony with the ecological health of the land.

✶ No new mines are developed in the Santa Rita Mountains.

✶ The Santa Ritas continue 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 Forest health on the Santa Rita Ecosystem Management Area. 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 Rita Ecosystem Management Area.

Friends of Madera Canyon

Friends of Madera Canyon was established to advance historical, scientific, educational, and interpretive programs in Madera Canyon. The group works to heighten public interest in the Santa Rita Mountains and conservation through education programs. They also assist the Forest Service in its operations, assist in data gathering and public feedback, and generally assist the Forest Service in its effort to provide rewarding recreational opportunities for all visitors.

Santa Rita Experimental Range

The Santa Rita Experimental Range encompasses roughly 80,000 acres on the northern side of the Santa Ritas much of which is directly adjacent to Forest land. The Experimental Range, established in 1902 to study range recovery from drought and overgrazing as well as sustainable grazing practices, is the oldest in the country. It spans from the Sonoran desert at approximately 3,000 feet of elevation to semi-arid grassland scrub at 4,500 feet of elevation. The range and contiguous Forest lands form a gradient of protected land stretching from below 3,000 feet elevation up to 9,000 feet elevation and encompassing a variety of distinct life zones.

Santa Rita Important Bird Area

The Santa Rita Important Bird Area encompasses the area of Madera Canyon and the Mt. Wrightson Wilderness above 4,500 feet elevation. The habitat consists of oak-woodland, transitioning to pine-oak woodland, and finally mixed conifer at the highest elevations. The drainages of the area support riparian habitat consisting of ash cotton wood and sycamore. The IBA supports Species of Conservation Status of the Sierra Madre bird community including: Northern Goshawk, Gray Hawk, Mexican Spotted Owl, Whiskered Screech-owl, Montezuma Quail, Elegant Trogon (within seven canyons), Arizona Woodpecker, Violet-crowned Hummingbird, Lucifer Hummingbird, Costa's Hummingbird, Berylline Hummingbird, White-eared Hummingbird, Painted Redstart, Red-faced Warbler, Grace's Warbler, Olive Warbler, and Varied Bunting.

Save the Scenic Santa Ritas

Save the Scenic Santa Ritas is a grassroots organization that formed in 1996 in response to a proposed land exchange between the Coronado National Forest and ASARCO mining company. The land exchange was a step toward opening an open pit copper mine in the Santa Rita Mountains. The group

works to protect the scenic, aesthetic, recreational and wildlife values of the Santa Rita Mountains. Although the land exchange proposal was withdrawn in 1998, in 2005 Augusta Resource company bought Rosemont Ranch and began the process to create an open pit copper mine in the mountains. The group is working to prevent mining from occurring in the short term and to obtain permanent protection for Forest lands in the Santa Ritas by withdrawing it from mineral entry.

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 Santa Ritas 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 Rita Ecosystem Management Area.

ADJACENT LAND USES

A large suburban development is currently being considered in lands just to the northeast of the entrance to Madera Canyon. The development would potentially contain 180 new homes on a 744.4-acre parcel. This type of development will directly affect wildlife corridors leading north and west from Madera Canyon along with affecting the nature of the north side of the range.

ECOLOGICAL RESTORATION

Threats include the suppression of natural fire regimes, and changes in natural watershed function/ flow regimes. Direct impacts include:

* Changes in overstory and understory structure of fire adapted vegetation types
* Encroachment of woody species
* Structurally denser vegetation with higher fuel loads
* Increased potential for stand-replacing fires
* Decreases in overall water infiltration in upland areas
* Lowering of local water tables
* Downcut streambeds

Affected resources include: Chihuahuan pine stands and associated species (Northern goshawk, Mexican spotted owl), riparian-dependent species, native fish, northern Mexican Gartersnake, Sonoran mud turtle, Chiricahua leopard frog, neotropical migrant birds.

EXTRACTIVE USES

Mining

The Helvetia area near the northwest side of the EMA is currently the site of limestone extraction. The limestone transport takes place over a dirt road and the limestone dust rising from transport trucks can be seen for miles. Several more limestone mines have been proposed just to the north and east of the EMA.

As of May, 2008 Augusta Resource, a small Canadian Mining company, is proposing an open pit Copper Mine on their Rosemont Ranch property on the northwest side of the range. The mine is proposed to be partially located on National Forest land. The proposed mine threatens water and air quality, recreation opportunities, wildlife and wildlife habitat and economic sustainability on the Santa Rita Ecosystem Management Area. The northern portion of the Santa Rita Mountains feeds into the watershed of the Tucson basin and surrounding communities. The Arizona Game & Fish Department expressed their view in July of 2008 that the proposed mine would "render the northern portion of the Santa Rita Mountains virtually worthless as wildlife habitat and as a functioning ecosystem, and thus also worthless for wildlife recreation."[5] Because of the amount of water necessary to run the mine and extract copper, the mine is likely to have significant impacts on groundwater and private wells in the surrounding areas. Impacts from the mine would include:

* Leaching of exposed tailings surfaces and unintended leaks from other facilities resulting in the release of potentially toxic heavy metals and other chemicals into ground and surface waters

✶ Truck exhaust and dust from tailings and waste piles being blown by prevailing winds toward major new residential developments east of the Tucson basin

✶ Loss of lands currently available for recreation on the forest

✶ Aggravation of our increasingly crowded public lands associated with Pima County's population growth

✶ Decrease in the quality of recreational experiences

✶ Loss of a significant portion of the wildlife habitat and movement corridor on the eastern side of the Santa Ritas, impacting a variety of imperiled species

Figure 5.3 **Erosion from a poorly-conceived road.**

INVASIVE SPECIES

The Santa Ritas contain extensive areas Lehmann lovegrass (*Eragrostis lehmannii*). This grass affects the composition of semidesert grasslands and competes with native grass species. Lehmann lovegrass dominates much of the Santa Rita Experimental Range which provides an avenue for further invasion of the species onto forest lands. Madera Canyon has extensive stands of *Vinca Major* along the riparian corridor, and Mexican paloverde along the roadway. Buffelgrass has been found and eliminated at Proctor but may continue to pose a threat from surrounding lands.

ROADS/TRANSPORTATION SYSTEM

The eastern side of the Santa Rita Mountains is being severely impacted by off-road motorized recreation. Motorized recreation in the area is not effectively managed and is producing a growing network of illegal user-created roads that is rising to incredible concentrations. Threats include existing non-system roads and creation of new non-system roads, and lack of enforcement of the legal transportation system.[6]

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.

U.S.-MEXICO BORDER

Illegal alien traffic through the Santa Ritas is significant, leading to trampling of vegetation, and accompanying trash. Campfires have potential for starting forest fires if they are not properly put out as evidenced by the Proctor fire started on June 22, 2007. These threats are exacerbated by the remoteness of much of the area. Impacts of this type of foot travel is different from that of recreational hikers because while recreational hikers generally stay on trails, migrants often cause erosion by taking shortcuts down steep slopes between switchbacks.

The Santa Rita Ecosystem Management Area (EMA) is a biological gem of the Coronado National Forest. It is known for the outstanding birding opportunities found in Madera Canyon and surrounding areas. This type of recognition and appreciation adds to the ecological sustainability of the area along with the economic sustainability of the region and should be a major consideration in management of the area. The range still 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 Santa Rita 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

Objectives

Maintain wildlife corridors between the Santa Rita EMA and the Tumacacori EMA, the Huachuca EMA, the Whetstone EMA and other surrounding natural areas.

Maintain the ecological integrity of the Santa Rita EMA in the face of further development of the surrounding lands and increased visitor use.

Actions

Foster public-private partnerships that will lead to landscape-level conservation through coordination of land use across Forest boundaries.

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

Ecological Restoration

Objectives

Restore and maintain natural disturbance regimes (e.g., fire, flood), in a manner that promotes naturally functioning ecosystem processes.

Restore Madrean Pine-Oak Woodland and Madrean Encinal to resilient ecological systems that tolerate wildfire, flood and other natural influences.

Restore and maintain natural vegetative characteristics and vegetative diversity.

Prevent catastrophic stand-replacing wildfires.

Maintain the watershed health and function of watersheds in the Santa Rita EMA.

Actions

Designate Madera Canyon as a "no collecting area."

Implement wildland fire use for restoring historical fire patterns and for restoring natural vegetation characteristics.

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

Nonextractive Uses

Objectives

Restore historical native wildlife diversity.

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

Recreational Planning

Minimize wildlife disturbance due to recreational uses of the Forest.

Minimize damage to natural and cultural resources due to recreational uses of the Forest.

Actions

Manage dispersed camping during hunting season in order to prevent ecological damage in the areas of Proctor Road, Gardener Canyon Road, Mt. Hopkins Road, Box Canyon Road, Casa Blanca and Adobe Canyon Road and other areas of high use.

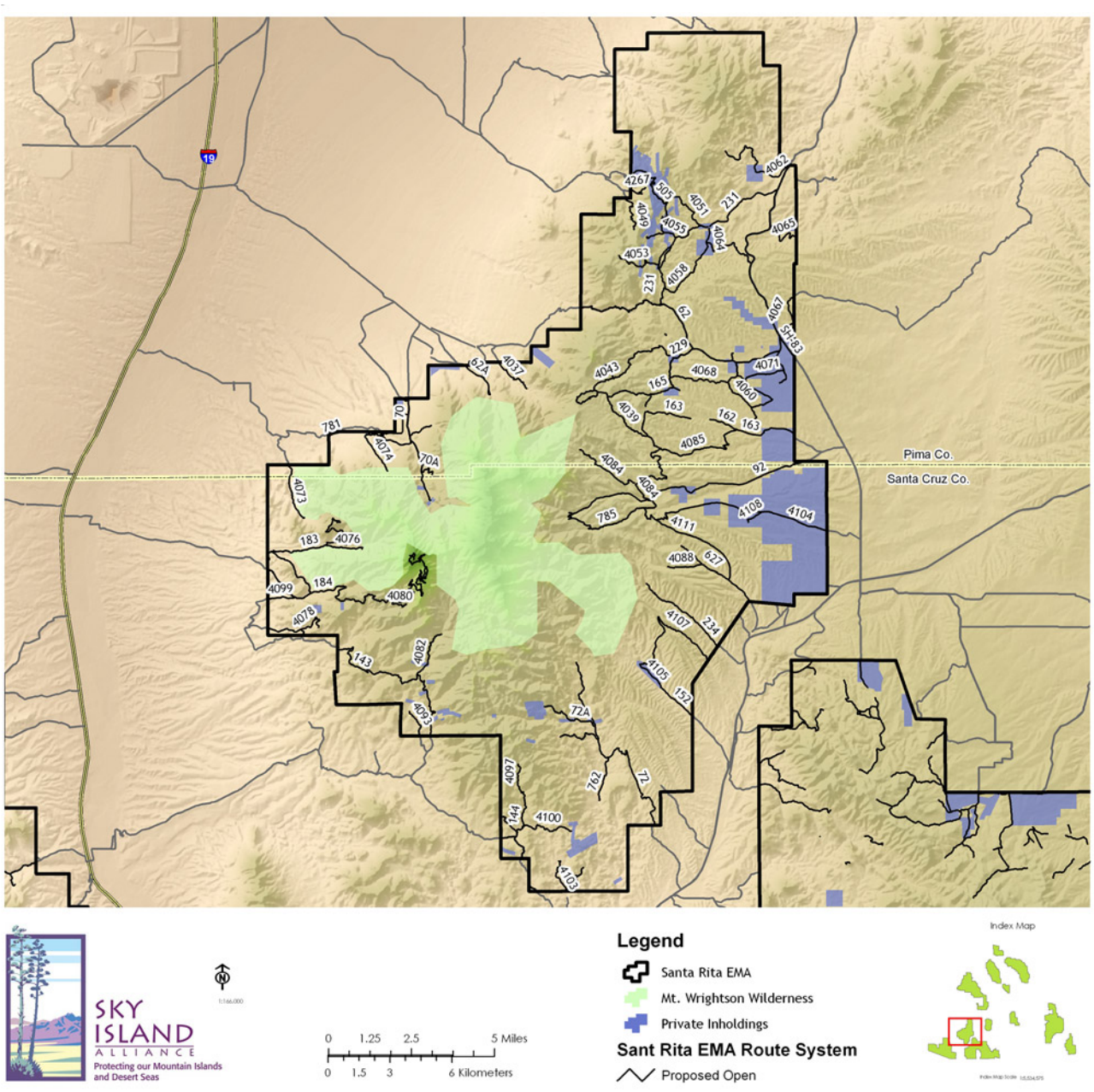

Figure 5.3 **Travel Management Plan and Route Recommendations for the Santa Rita EMA**

Roads/Transportation System

Objectives

Mitigate impacts of the existing transportation system and of motorized recreation on all physiographic features, species, and ecological systems.

Minimize interference with quiet recreation through management of motorized recreation.

Actions

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

Enforce cross-country travel restrictions in the eastern portions of the range, and where necessary, close roads that are facilitating new creation of illegal routes.

Close roads that many wildcat roads are being created from.

See Figure 5.3 for a map of the proposed Transportation System for the Santa Rita EMA.

Special Management Areas

Objectives

Protect Roadless area values and characteristics.

Provide opportunities for quiet recreation on the Santa Rita EMA.

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

Correct existing maps of boundaries of inventoried roadless areas to reflect the true boundaries on the ground.

Manage 65,397 acres of the Santa Rita EMA to maintain their current wilderness suitability. See Figure 5.4 for a map of the area to be managed for wilderness suitability.

Wilderness

Mount Wrightson Wilderness Area

Mount Wrightson, a spectacular peak visible from miles around, rises to 9,452 feet of elevation at the heart of the Mount Wrightson Wilderness. The 25,260 acres of Mount Wrightson Wilderness also includes the prominent peak of Mt. Hopkins and all of the Santa Rita Crest. The Wilderness encompasses rough hillsides, deep canyons, and lofty peaks, surrounded by semiarid hillsides and sloping grasslands. Douglas fir, Gambel oak, Limber pine, Apache pine and Ponderosa pine dominate high elevations in the area and stream-fed canyons support an abundance of plant and animal life. Several remnant stands of quaking aspen also occur here.

Special Management Areas

SPECIAL INTEREST AREAS

Special Interest Areas are special management areas designated to protect unique botanical, zoological, geological, cultural, or scenic values. They may also be designated to protect and manage sensitive species or other elements of biological diversity. These areas are managed to protect the unique elements for which they were designated while providing appropriate public education and recreational opportunities. These areas help the Forest Service to maintain ecological and social sustainability. The rich cultural heritage of the Santa Rita Mountains warrants the designation of Rosemont Valley Historical Area as a Special Interest Area.

Proposed Rosemont Valley Historical Area

Rosemont Valley was inhabited and utilized by pre-historic cultures and Native Americans, by Spanish and Mexican settlers during the Spanish territorial period, and then by Anglo ranchers, loggers and miners. The area is rich in built structures and physical sites of cultural importance.

NAME: Rosemont Valley Historic Area

SIZE: Approximately 14,000 acres.

BOUNDARIES: This Historic Area includes Rosemont Junction, Rosemont Ranch and Barrel Canyon which drains directly into Davidson Canyon, and the town of Helvetia. It extends from the crest of the mountains, and slopes down to the west through the historic mining town of Helvetia, to the east through Rosemont Junction to the National Forest boundary, to Mount Fagan to the north, and to Box Canyon Road to the south.

ELEVATION: Approximately 4,400 to 6,300 feet.

GENERAL DESCRIPTION OF AREA: This Historic Area includes rolling hills of oak studded grasslands, numerous perennial springs, and rugged cliffs. It is a biologically rich area with numerous perennial waters, which accounts for its long human occupation.

CURRENT USES: This area is currently used for wildlife viewing, mountain bike riding, dirt bike and quad riding, hiking, camping, ranching and hunting.

JUSTIFICATION FOR DESIGNATION: In the 1970s detailed cultural inventories were conducted for the Anamax Mining Company. Approximately 621 sites

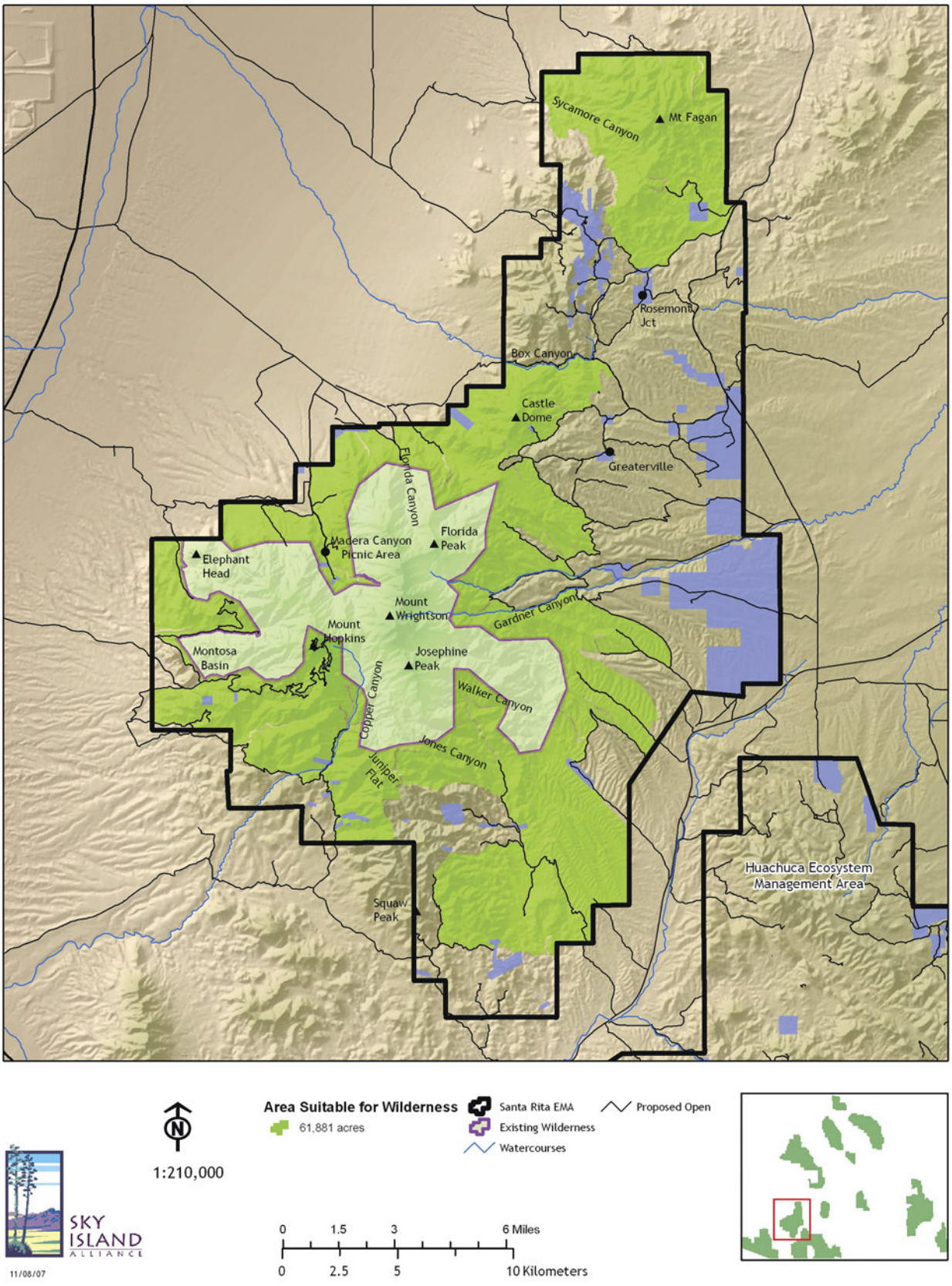

Figure 5.4 **Area Suitable for Wilderness and to be Managed for Wilderness Characteristics**

were identified and recorded, ranging in time from the late Pleistocene, Archaic, Hohokam, Early Piman, Spanish, Mexican, and American Territorial periods (10,000 B.C. to the present). Most of these sites reflect Native American use and occupation over many thousands of years, while only 30 sites date to the historic period or the last 300 years. Notable historic sites include a number of mines, camps, mills, and the mining towns of Helvetia, Old Rosemont, and New Rosemont, and the VR Ranch established by Edward Vail in 1883, which is today the headquarters of Rosemont Ranch (see Pima County's "Preserving the Santa Rita Rosemont Ranch" 2004 report on this area for more details). Due to its past mining history, the area contains a well developed network of dirt roads which are used primarily for road-based recreation Personal observance of this use over the years indicates that recreationists tend to stay on the roads.

RECOMMENDATIONS FOR FUTURE USE: Cultural preservation should be a priority for this area. All existing uses should continue to be permitted, however the most sensitive cultural sites should be protected. My recommendation for this area would be to identify and protect these most sensitive sites without drawing attention to them (to prevent vandalism). In addition, a few informational signs may be placed at the existing off-road vehicle staging areas along with the other forest use notices.

PROPOSED BY: Lainie Levick, Hydrologist, University of Arizona

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[1] Stefferud, J. A. and S. E. Stefferud. 2004. Aquatic and Riparian Surveys of Selected Stream Courses on Sierra Vista and Nogales Ranger Districts, Coronado National Forest, Cochise and Santa Cruz Counties, Arizona. Arizona State University, Tempe, Arizona.

[2] Federal Register. 62 FR 49025.

[3] Wilson, J. P. 1995. Islands in the Desert. A History of the Uplands of Southeastern Arizona. University of New Mexico Press, Albuquerque New Mexico.

[4] 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.

[4] Davis, Tony. "Game and Fish is Harsh in Rosemont Opposition." The Arizona Daily Star. July 21, 2008.

[6] All of the impacts listed for this threat come from Trombulak, S. C., and C. Frissell. 2000. Review of ecological effects of roads on terrestrial and aquatic ecosystems. Conservation Biology 14; 18-30.