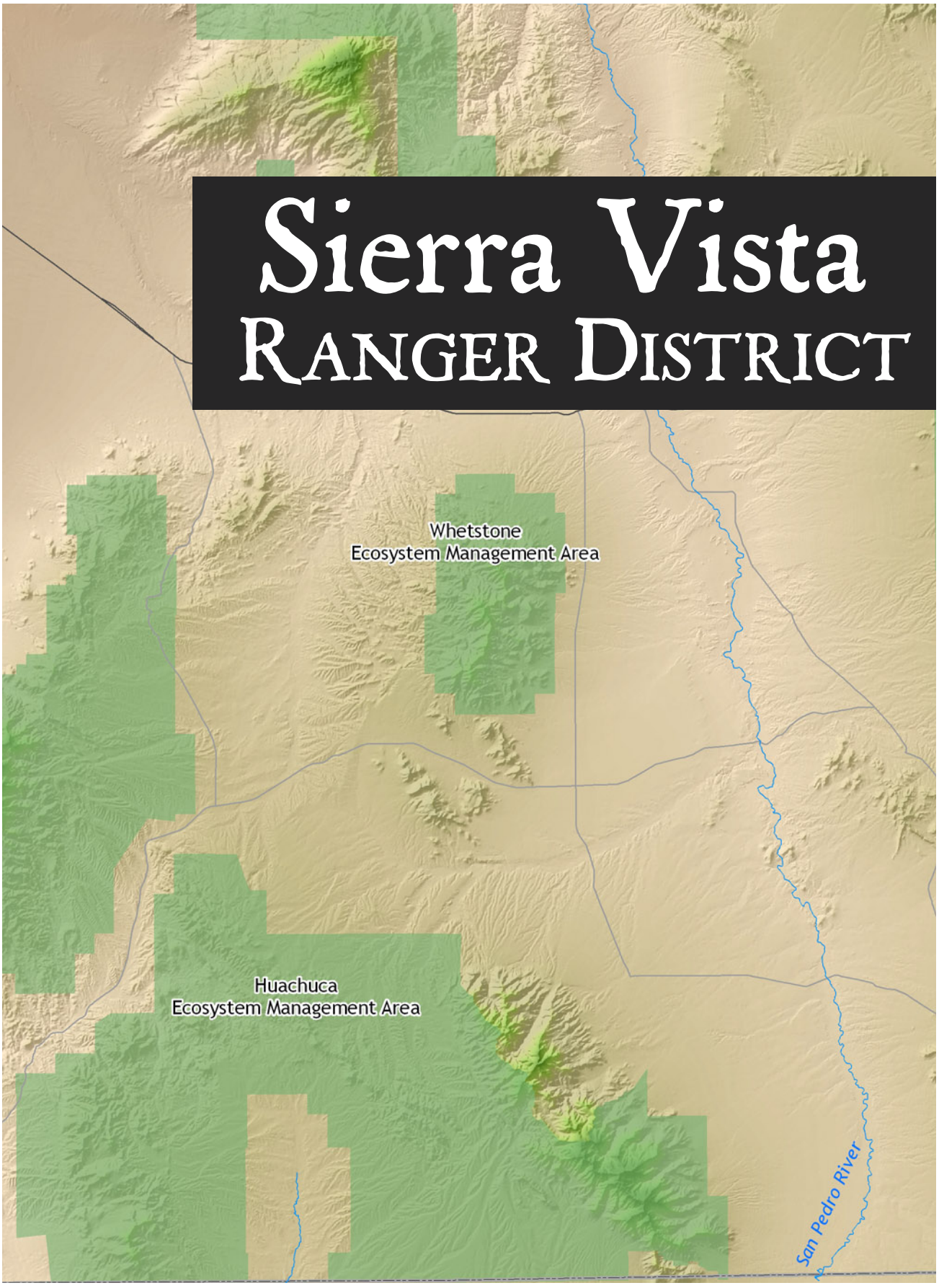
Sierra Vista
Ranger District
Whetstone
Ecosystem Management Area
Huachuca
Ecosystem Management Area
San Pedro River

CHAPTER 13 Whetstone Ecosystem Management Area

The Whetstone Mountains are a small, isolated range centrally located in the Coronado National Forest. The Whetstone Ecosystem Management Area (EMA) encompasses 45,023 acres. Elevations range from approximately 4,788 feet to 7,711 feet at the summit of Apache Peak. The range is located approximately seven miles southwest of Benson, Arizona and 13 miles north of Sierra Vista, Arizona. The Whetstone EMA lies closest to the Santa Rita and Huachuca EMAs. The Santa Rita Mountains lie southwest of the Whetstones with the Las Cienega Creek National Conservation Area located in the intervening valley. The National Conservation Area is home to a number of Endangered species including lesser long-nosed bat, southwest willow flycatcher and Gila chub. The Huachuca EMA encompasses the Canelo Hills, Patagonia Mountains and the southern end of the Huachuca Mountains. The Babocomari River and Fort Huachuca Military reservation lie between the Whetstone and Huachuca Mountains. The Babocomari River is an important corridor for wildlife movement, a flyway for migrating birds, and a tributary to the San Pedro River, one of the most biologically diverse riparian areas in the United States. The Dragoon Mountains lie east of the Whetstones across the San Pedro River Valley. Kartchner Caverns State Park borders the northeast side of the Management Area.

Current human activities in the Whetstones include camping, hunting and small-scale mining exploration.[1] Access to the mountains is limited due to locked gates on private lands that border the Forest. The eastern slopes of the Whetstones drain into the San Pedro River valley just north of the San Pedro Riparian National Conservation Area. The western slopes feed the upper Cienega Creek Basin, an important regional source of groundwater recharge and flood prevention for the community of Tucson. Cienega Creek also forms an essential part of the Las Cienegas National Riparian Conservation Area which harbors the rare vegetative communities of cienegas, cottonwood-willow riparian forests and sacaton grasslands. The riparian corridors of the San Pedro River and Cienega Creek contain stretches of perennial water that support endangered fish and other wildlife and are two of the most biologically important streams in southern Arizona.

Natural History

The Whetstone Mountains are part of the Basin and Range Province covering the southern half of Arizona. Over the last 30 million years, the basins have dropped thousands of feet leaving northwest-southeast trending mountain ranges isolated as Sky Islands.[2] The small Whetstone range is relatively simple and unfaulted compared to other Sky Islands of the Basin and Range Province. What it lacks in quantity the range makes up for in quality with an isolated fault block in a limestone formation creating the spectacular Kartchner Caverns at the base of the range. The Caverns, now a state park, are visited for

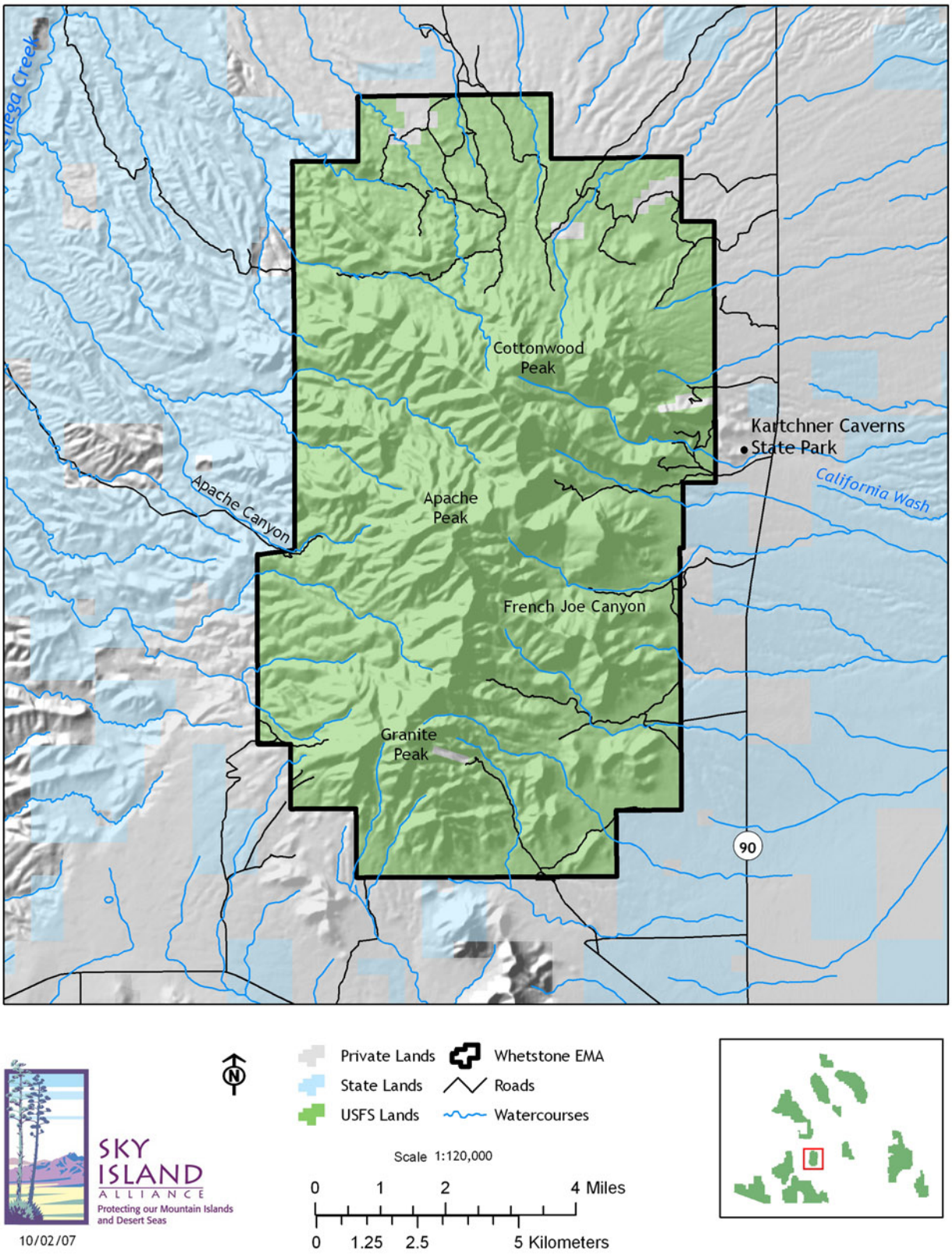

Figure 13.1 **Overview of Whetstone EMA**

their spectacular underground formations that were carved by slightly acidic rainwater dissolving away limestone rock. The caves are an important nursery roost for cave myotis bats which feed in a variety of habitats in the Whetstones.[3]

In addition to the spectacular formations of Kartchner Caverns, smaller caves dot the limestone hills on the eastern side of the mountains. Several of these caves are located in French Joe Canyon. These readily visible geologic formations make the canyon a popular destination for physical geology class field trips from the University of Arizona, Cochise College, and for interpretive trips hosted groups such as the Tucson Audubon Society. Another notable feature of the mountains is that they contain the most complete sequence of Paleozoic and Cretaceous sedimentary rock in southern Arizona, all in proper order.[4]

The limestone core of the Whetstone Mountains creates a number of spring-fed perennial streams and isolated oases such as those found in Wakefield Canyon and French Joe Canyon. French Joe Canyon is host to an intermittent stream lined with oak, ash, cottonwood and Arizona walnut. Located on the east side of the mountain range, it is the most significant riparian habitat in the management area. The canyon supports a great diversity of birds. Over 147 species have been cited here and a nesting pair of rufous-capped warblers has been recorded in the canyon multiple years. French Joe Canyon has been home to nesting rufous-capped warblers for multiple years and 147 different species of birds have been sited in the canyon.[5] A recent survey of the herpetofauna of the Whetstone Mountains found five species of amphibians and 36 species of reptiles present in the range.[6] The riparian habitats of the range support common species such as mountain lion and black bears, along with sensitive species such as Arizona ridge-nosed Rattlesnake and Mexican Spotted Owls. Limestone outcroppings support rare plants and animals that specialize in that habitat. Large populations of whitetail deer can be found near the south end of the range.

Vegetation in the Whetstone Mountains climbs from semidesert grassland-mixed scrub and Chihuahuan desert scrub to Madrean encinal, Madrean pine-oak woodland, and tops out at a small patch of ponderosa pine at the highest elevations around Apache Peak and French Joe Peak.

Human Prehistory and History

The first solid archeological evidence of human habitation in this area shows Clovis hunters spearing mammoths in the San Pedro Valley by 9,000 years B.C.[7] Next came the long occupancy of the Cochise Culture of hunter-gatherers, eventual introduction of domesticated crop plants, and development of more densely settled networks of farming peoples. In these later times, the Whetstone Mountains sat near the confluence of ranges for the Mogollon, Salado, and Hohokam peoples that populated the region, and lasting in some form through the arrival of the Apache.[8]

The current English name of Whetstone Mountains is derived from a deposit in the range of novaculite, a hard, fine-grained rock used for whetstones.[9] French Joe Canyon and French Joe Peak are named for a man known as French Joe who located a mine and lived in the canyon near the peak for many years.[10]

It is believed that Wyatt Earp shot and killed Curly Bill Brocius in a shootout at Mescal Springs. A small metal line shack, decaying high in one of the canyons, still has newspapers from 1939 on its floor. Other relics of historic ranching operations are scattered across the mountain range, but most were never reached by roads and are now overgrown by shrubs and trees. The south end of the Whetstones was historically the site of several small mining operations, and a few mining claims with their attendant roads. A remote cave in the Whetstones which harbors an important archeological site, has been protected by the difficult terrain and distance from roads.

The south end of the Whetstone range was historically the site of several small mining operations and a few mining claims remain open. Mining occurred near Granite Peak between 1918 and 1929 and primarily produced copper and lead. Sporadic mining also occurred at the Twin Peaks Mine as late as 1960.[11] In more recent times, these mountains have been explored by amateur fossil hunters that discovered exposed dinosaur bones in the foothills in 1994. *Sonorasaurus thompsoni* was the first dinosaur that was found in southern Arizona.[12]

The Whetstone 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 Whetstone Ecosystem Management Area. The Forest Service identified 45 species of plants and animals including two Threatened or Endangered species, along with other species determined to be Species of Concern or Species of Interest due to management issues (Table 13.1).

Table 13.1 **Species Identified by the Forest Service to Guide Management Decisions**

Fish	
Rhinichthys osculus	Speckled Dace
Mammals	
Choeronycteris mexicana	Mexican Long-tongued Bat
Lasiurus blossevillii	Western Red Bat
Plants	
Acacia millefolia	Milfoil Acacia
Bouteloua parryi	Parry's Gramma
Draba petrophila var. *viridis*	Rock Whitlow-grass
Eriogonum arizonicum	Arizona Wild-buckwheat
Escobaria vivipara var. *bisbeeana*	Bisbee's Pincushion Cactus
Hexalectris spicata var. *arizonica*	Crested Coralroot
Macromeria viridiflora var. *viridiflora*	Giant-trumpets
Mammillaria heyderi var. *macdougalii*	Little Nipple Cactus
Perityle dissecta	Slimlobe Rockdaisy
Phoradendron bolleanum ssp. *pauciflorum*	Rough Mistletoe
Plagiobothrys pringlei	Pringle's Popcorn-flower
Rhamnus crocea ssp. *pilosa*	Redberry Buckthorn
Scutellaria tessellata	Huachuca Mountains Skullcap
Sophora arizonica	Arizona Necklace
Reptiles	
Crotalus w. willardi	Arizona Ridge-nosed Rattlesnake
Sceloporus slevini	Slevin's Bunchgrass Lizard

Table 13.2 **Foundations of Native Biological Diversity**

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

Cottonwood Willow Riparian Forest
Desert Riparian Woodland and Shrubland (<4,500 ft.)

Desert Communities
Chihuahuan Desert Scrub

Interior Chaparral
Interior Chaparral

Madrean Encinal Woodland
Madrean Encinal

Madrean Pine-Oak Woodland
Madrean Pine-Oak 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

Physiographic Features

Natural caves along French Joe Canyon

Community

Cienegas
Sacaton riparian grassland

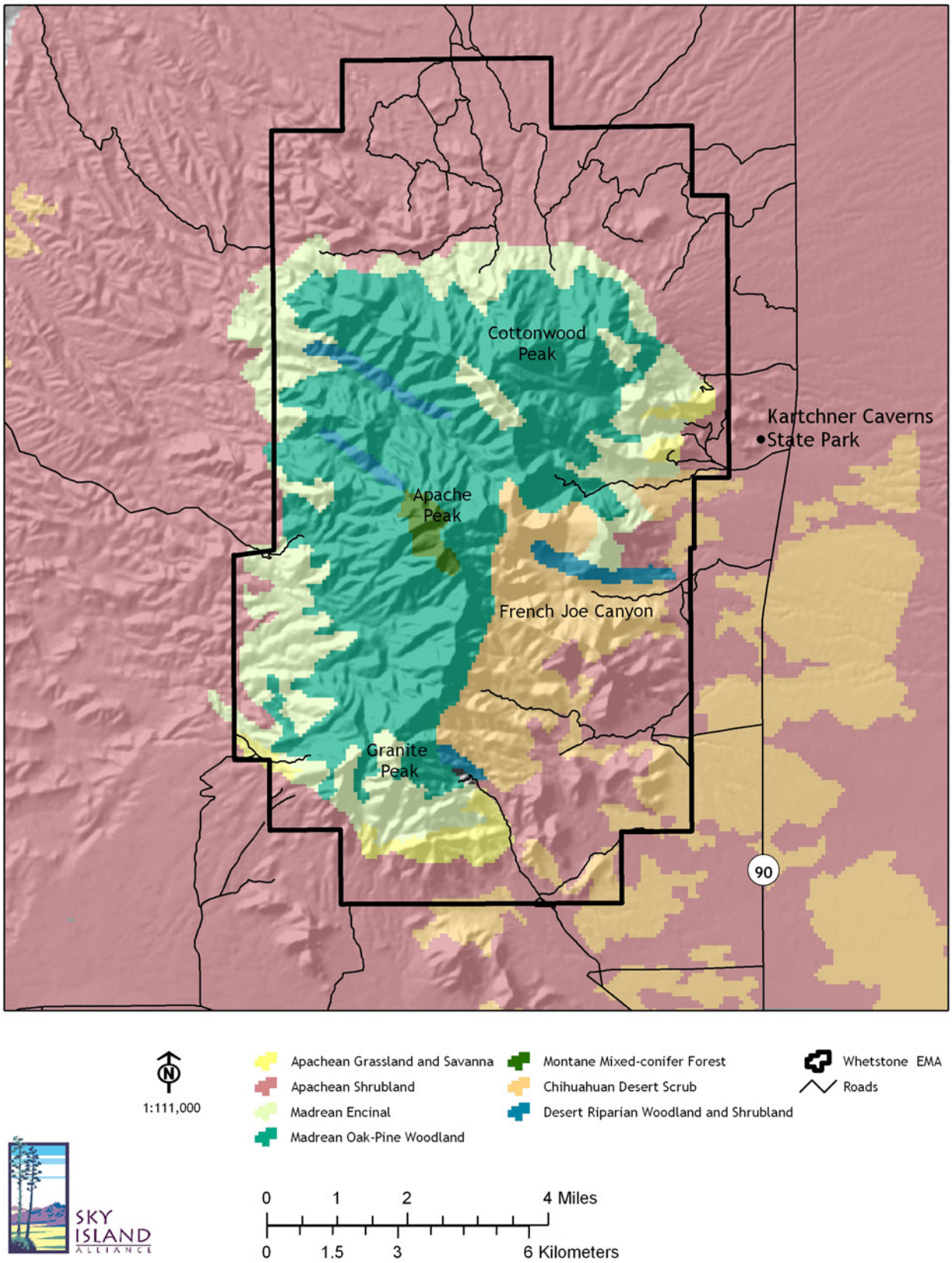

Figure 13.2 **Ecological Systems of the Whetstone EMA**

Table 13.3 **Additional Species that Require Special Management Consideration**

Amphibians	
Ambystoma tigrinum stebbinsi	Sonoran Tiger Salamander
Rana chiricahuensis	Chiricahua Leopard Frog
Rana pipiens	Northern Leopard Frog
Rana yavapaiensis	Lowland Leopard Frog
Birds	
Aimophila botterii	Botteri's Sparrow
Aimophila carpalis	Rufous-Winged Sparrow
Ammodramus bairdii	Baird's Sparrow
Athene cunicularia hypugaea	Burrowing Owl
Callipepla squamata	Scaled Quail
Colaptes chrysoides	Gilded Flicker
Cyrtonyx montezumae	Montezuma Quail
Empidonax traillii extimus	Southwest Willow Flycatcher
Pipilo aberti	Abert's Towhee
Vireo bellii	Bell's Vireo
Crustaceans	
Stygobromus arizonensis	Arizona Cave Amphipod
Insects	
Abedus herberti	Giant Water Bug
Adopaeoides prittwitzi	Sunrise Skipper
Agathymus evansi	Huachuca Giant Skipper
Ancyloxypha arene	Tropical Least Skipper
Calephelis arizonensis	Arizona Metalmark
Heterelmis stephani	Stephan's Heterelmis Riffle Beetle
Mammals	
Corynorhinus townsendii pallescens	Pale Lump-nosed Bat
Cynomys ludovicianus	Black-Tailed Prairie Dog
Macrotus californicus	California Leaf-Nosed Bat
Myotis ciliolabrum	Western Small-Footed Myotis Bat
Myotis thysanodes	Fringed Myotis Bat
Myotis velifer	Cave Myotis Bat
Panthera onca	Jaguar
Peromyscus merriami	Mesquite Mouse
Sciurus arizonensis	Arizona Gray Squirrel
Sigmodon ochrognathus	Yellow-Nosed Cotton Rat
Sorex arizonae	Arizona Shrew
Mollusk	
Holospira whetstonensis	Whetstone Holospira
Plants	
Agave parviflora ssp parviflora	Small-Flowered Agave
Amoreuxia gonzalezii	Santa Rita Yellowshow
Amsonia grandiflora	Arizona Slimpod
Arabis tricornuta	Rincon Mountain Rockcress
Asclepias uncialis	Greene Milkweed
Aster potosinus	Lemmon's Aster
Astragalus hypoxylus	Huachuca Milkvetch
Browallia eludens	Elusive New Browallia
Carex ultra	Cochise Sedge
Coryphantha scheeri var. *robustispina*	Pima Pineapple Cactus
Dryopteris patula var. *rossii*	Mexican Shield Fern
Echinomastus erectocentrus var. *erectocentrus*	Needle-spined Pineapple Cactus
Erigeron arisolius	Erigeron arisolius
Erigeron lemmonii	Lemmon's Fleabane
Erigeron pringlei	Pringle's Fleabane
Euphorbia macropus	Woodland Spurge
Graptopetalum bartramii	Patagonia Mountain Leather-Petal
Hedeoma dentatum	Arizona False Pennyroyal
Heterotheca rutteri	Rutter's Golden-Aster
Hexalectris revoluta	Chisos Coral-Root
Hexalectris warnockii	Purple-Spike Coralroot
Hieracium pringlei	Pringle's Hawkweed
Hieracium rusbyi	Rusby's Hawkweed
Lilaeopsis schaffneriana var. *recurva*	Affolter
Lilium parryi	Lemon Lily
Lupinus huachucanus	Huachuca Mountain Lupine
Macroptilium supinum	Supine Bean
Metastelma mexicanum	Norrowleaf Or Wiggin's Swallow Wort
Muhlenbergia dubioides	Box Canyon Muhly
Pectis imberbis	Beardless Chinch Weed
Penstemon superbus	Superb Beardtongue
Psilactis gentryi	Gentry's Bare Ray Aster
Rumex orthoneurus	Bloomer's Dock
Samolus vagans	Chiricahua Mountain Brookweed
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
Phrynosoma cornutum	Texas Horned Lizard
Thamnophis eques megalops	Mexican Garter Snake

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 13.2). Although there are many fine variations in plant communities on the Whetstone 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.[13] Protection of ecological systems will help ensure the protection of biological diversity in the Whetstones. Figure 13.2 shows the distribution of ecological systems in the Whetstones. Through contact with regional scientists and experts, and other people familiar with the Whetstones, 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 area 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 13.3 lists additional species whose needs should be assessed during plan revision.

The Whetstone 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 uses of the land are also an important part of the cultural heritage of the area (Table 13.4).

Table 13.4 **Elements of Cultural Heritage**

Human History
Mescal Springs
Social Values
Opportunities for solitude and primitive recreation
Opportunities for quiet recreation

Desired Conditions

⚹ The Whetstone 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 Whetstone EMA and the following: Santa Rita EMA, Huachuca EMA, Santa Catalina EMA, Dragoon EMA and other surrounding wildlands.

⚹ Development around the Whetstone EMA does not prevent the continued use of prescribed fire and wildland fire as management tools.

⚹ The Whetstone EMA contributes to the health and recharge of the San Pedro Watershed and the Cienega Creek watershed.

⚹ Scenic resources, including geological features and viewsheds, do not lose value from their current classifications.

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

⚹ The Whetstone EMA is 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.

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 Whetstones 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 Whetstone Ecosystem Management Area.

In order to manage for ecological sustainability on the Whetstone Ecosystem Management Area, the following threats will need to be addressed in the revised Forest plan.

ADJACENT LAND USES

Major residential development is occurring to the northeast of the Whetstone EMA. Most notable is the Whetstone Ranch development. In 2006 this development was slated to eventually bring 20,000 new homes to the San Pedro Valley. Large-lot suburban housing developments are being built to the north of the Whetstones and second-home development is spreading out from the town of Elgin located southwest of the mountains. Impacts from this type of development along foothills and floodplains include:

⚹ Fragmentation of wildlife corridors

⚹ Restriction of movement of wide ranging vertebrates

⚹ Alteration of riparian vegetation through increased groundwater pumping

⚹ Increased visitation

⚹ Motorized access from adjoining subdivisions/private land

⚹ Proliferation of user-created roads

⚹ Increased threat from invasive species

⚹ Changes in disturbance regimes (e.g. fire)

DEMOGRAPHICS

Threats arising off the Forest include demographic pressures for increased human use of the Whetstones. The surrounding towns of Vail, Benson, and Sierra Vista are growing rapidly. In combination with slated housing developments to the north and northeast of the range, and the added attraction of neighboring Kartchner Caverns State Park, this growth will contribute to increased visitor use of the Whetstone

Figure 13.3 **Overall population growth of Cochise County from 1990 to 2000**

Town/City	1990	2000	Percent growth
Benson	3,824	4,711	23%
Bisbee	6,288	6,090	-03%
Huachuca City	1,782	1,751	-02%
Sierra Vista City	32,983	37,775	15%
Sierra Vista Southeast	9,237	14,348	55%
St. David	1,468	1,744	19%
Tombstone	1,220	1,504	23%
Whole Cochise County	97,624	117,755	21%

Ecosystem Management Area. The nearby Highway 90 was expanded to 4 lanes and will allow for increased traffic flow to the area.

Resources likely affected include: wide-ranging species (mountain lion, black bear, coatimundi, pronghorn and deer); species sensitive to human disturbance (e.g., bats, lizards, desert box turtle, jaguar, ocelot, Mexican spotted owl, and Coues' white-tailed deer); species vulnerable to trampling; desert tortoise; and all native vegetation types and their associated flora and fauna.

ECOLOGICAL RESTORATION

Threats include the suppression of historical 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: Chihuahua pine stands and associated species (Northern Goshawk, Mexican Spotted Owl), riparian-dependent species, native fish, northern Mexican gartersnake, Sonoran mud turtle, Chiricahua leopard frog, and neotropical migrant birds.

NONEXTRACTIVE USES

Following the opening of Kartchner Caverns State Park, the widening of highway 90 and the continued development of surrounding areas, visitor use of the Whetstone Ecosystem Management Area is expected to increase. Potential threats from unmanaged or poorly managed visitor use include creation of indiscriminate foot-paths and off-road vehicle tracks leading to the damage of resources.

ROADS/TRANSPORTATION SYSTEM

The limited set of rough Forest roads within the Whetstones has been expanding in some canyons due to off-road vehicles pushing past barriers and past signs marking the end of roads.[14]

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

The Whetstone 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 framework for long-term ecological health and sustainability in the Whetstone 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

Minimize negative impacts of nearby private-land development on ecological and cultural elements.

Maintain extant species on the Whetstone EMA that are sensitive to human disturbance and impacts of increased recreational use of the area.

Actions

Maintain wildlife corridors between the Whetstone Ecosystem Management Area and the Santa Rita, Huachuca, Dragoon, and the Santa Catalina Ecosystem Management Area, and other surrounding natural areas.

Minimize user impacts from private developments adjoining the Whetstones and from visitors to the Kartchner Caverns.

Roads/Transportation System

Objectives

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

Maintain opportunities for high-quality primitive recreation and quiet recreation.

Actions

Establish a clearly defined Transportation System for both Forest users and the Border Patrol.

Ensure that closed roads in the north part of the Whetstone EMA are not reopened. Monitor closures and restoration efforts. Upgrade barriers where necessary to insure restoration success.

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

Special Management Areas

Objectives

Protect Roadless area values and characteristics.

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.

Provide opportunities for quiet recreation on the Whetstone EMA.

Actions

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

Manage 38,585 acres of the Whetstone EMA to maintain their current wilderness suitability. (See Figure 13.4 for a map of the area to be managed for wilderness suitability.)

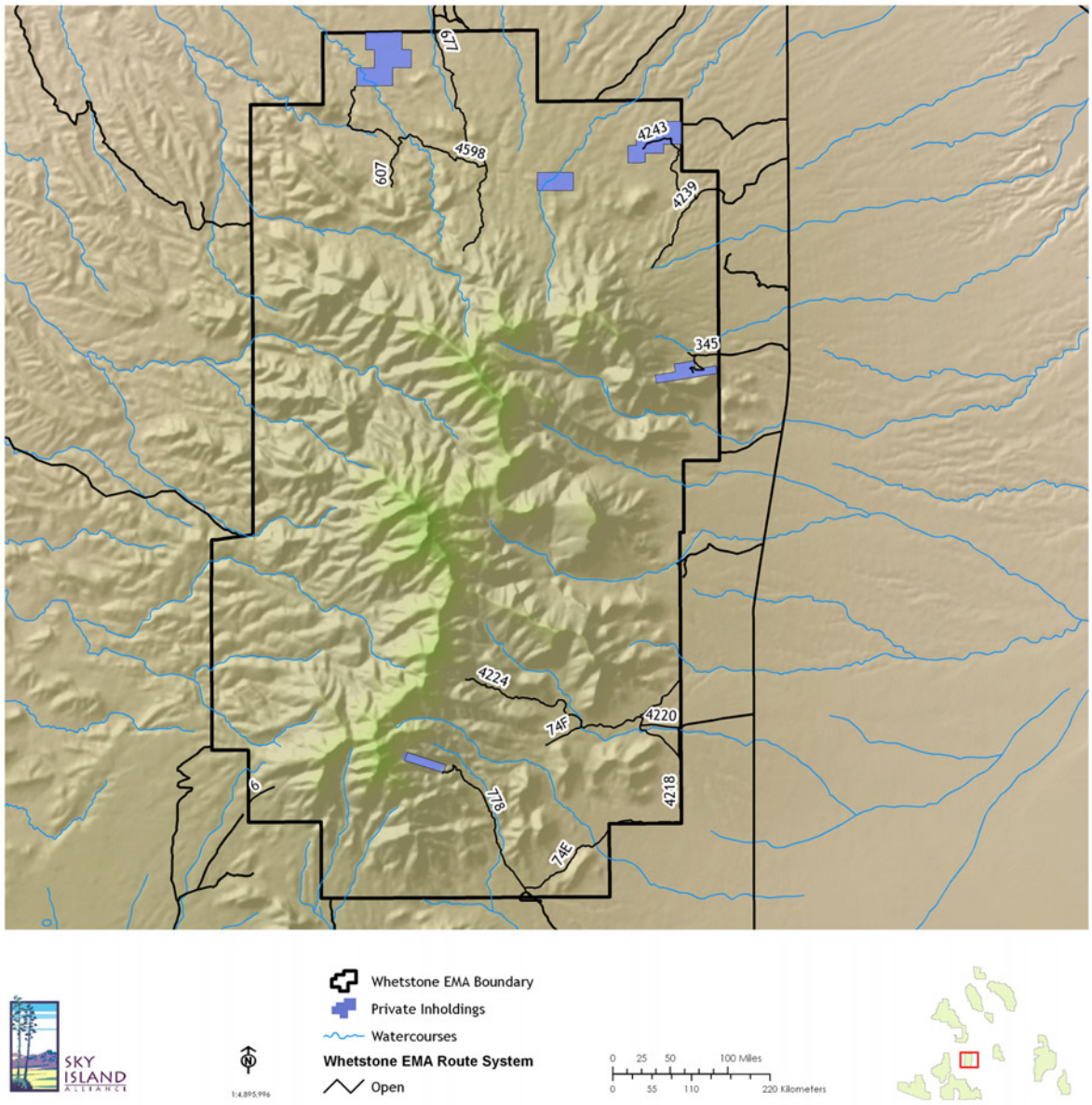

Figure 13.3 **Travel Management Plan and Route Recommendations for the Whetstone EMA**

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

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

WILDERNESS SUITABILITY

The Whetstone Roadless Area is nestled in the southern portion on the Coronado National Forest in Cochise County, Arizona between Benson and Sierra Vista. Rugged, remote, and largely unknown, the Whetstone Mountains Roadless Complex forms a classic southwestern wilderness. Few have ever visited its steep canyons or seen the sweeping grassland vistas available from its ridge-tops, but treasures await those sufficiently strong and adventurous. Wooded streams and isolated pine groves form islands of rare life forms and ancient fossils bear evidence of life long past. The Whetstone Mountains reach their high point of 7,711 ft on Apache Peak, rising from approximately 4,800 ft at their edges.

The Whetstones serve as an eastern boundary for the Sonoita Plains and Las Cienegas National Conservation Area. The limited set of rough Forest roads within the Whetstones has been gradually expanding in some of the canyons, as off-road drivers take signs and barriers at road ends as points of departure, pushing steadily deeper into the unprotected wilderness.

A broad band of limestone forms the surface rocks through much of the Whetstones. It provides the structure for several important cave features, including Kartchner Caverns. Metamorphic rocks form the southeastern corner of the mountains.

Throughout this roadless area, outstanding opportunities for solitude and primitive recreation exist. The entirety of this area meets the criteria identified in the 1964 Wilderness Act. As such, the roadless area described below is suitable for addition to the Wilderness system of the Coronado National Forest.

Inventoried Roadless Area

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 20,713 acres in the Whetstone IRA, while the earlier RARE II survey identified 36,610 acres. On-the-ground field analysis by Sky Island Alliance has determined that the roadless acreage in the Whetstone EMA is 38,833.

Archaeological/Cultural Values

It is believed that Wyatt Earp shot and killed Curly Bill in a shootout in Mescal Springs. A small metal line shack, decaying high in one of the canyons, still has newspapers from 1939 on its floor. Other relics of historical ranching operations are scattered across the mountain range, but most were never reached by roads and are now overgrown by shrubs and trees. The south end of the Whetstones was historically the site

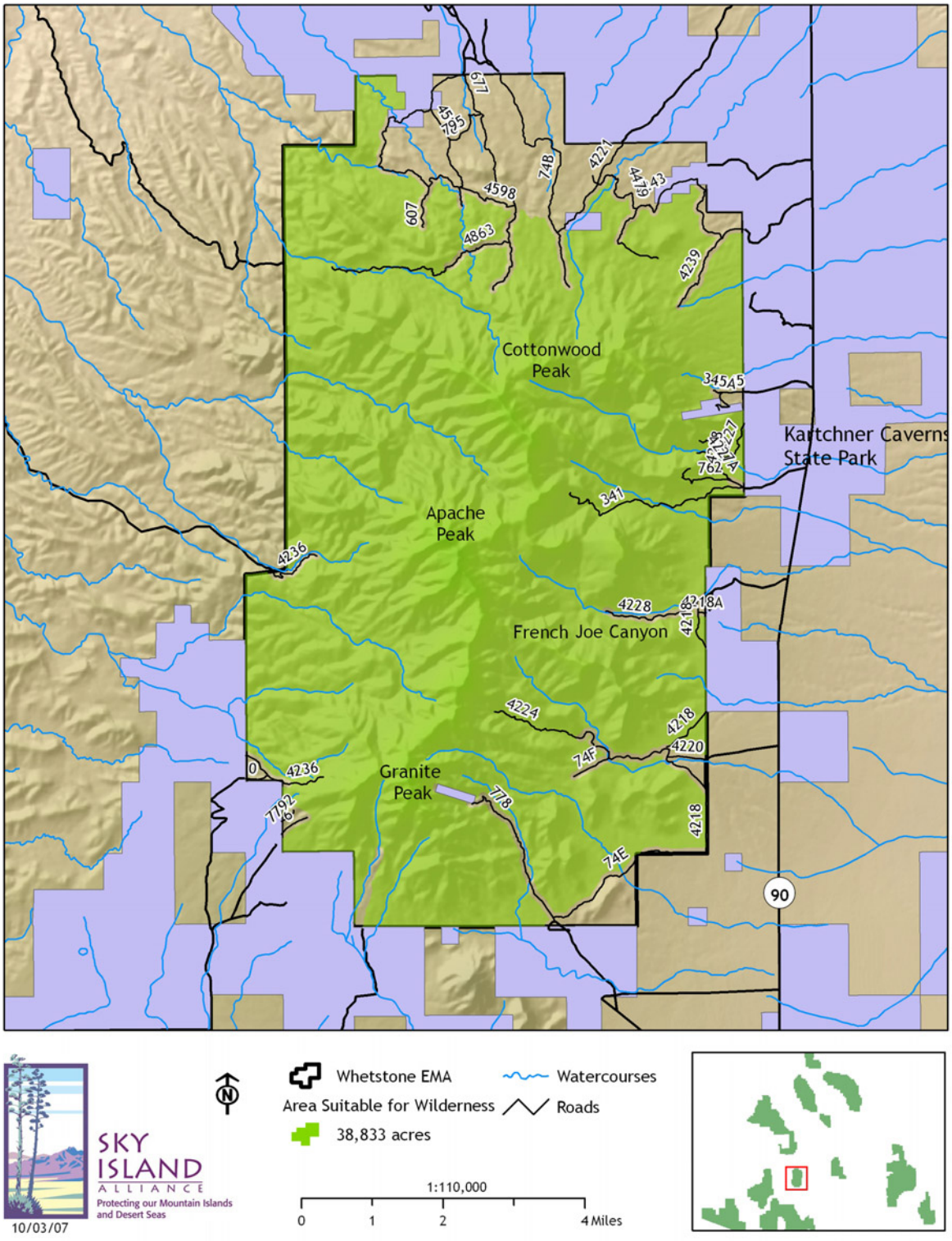

Figure 13.4 **Area Suitable for Wilderness and to be Managed for Wilderness Characteristics**

of several small mining operations, and a few mining claims with their attendant roads remain active. A remote cave in the Whetstones, which is an important archeological site, has been protected by the difficult terrain and distance from roads.

Recreational/Scenic Values

The steep, rugged, brush-covered terrain of the Whetstones provides a daunting challenge to all but the hardiest hikers. Only a few old pack trails cross its ridges, relics of ranching efforts many decades ago. Not even foot trails reach the highest peaks; their absence is evidence of the limited visitation this range has received. Many human users of the Whetstones are deer hunters, who visit every fall to engage in a wilderness hunting experience. Birdwatchers and campers are familiar with French Joe Canyon, which has easy access to a scenic canyon setting. A short hiking trail loops out of Kartchner Caverns State Park, and rockhounds occasionally visit the old mine sites in Mine Canyon.

Watersheds

The Whetstones form a significant part of the watershed for Cienega Creek, the centerpiece of Las Cienegas National Conservation Area and one of the most important streams in southeastern Arizona. With their limestone beds sloping down to the west, they supply the aquifer beneath Cienega Creek and several important springs. Canyons on the eastern side drain into the San Pedro River, while those on the western side feed Cienega Creek and thus flow into the Tucson basin.

Vegetation

The botanical treasures of the Whetstones have never been surveyed, and relatively few biologists have visited the range. Botanically, the Whetstone Mountains include and are surrounded by plains grassland and semidesert grassland, the former being one of the rarest vegetation zones in Arizona. Above the grasslands, Madrean evergreen woodland covers most of the mountain range, with the highest elevations supporting small stands of ponderosa pine. Several major canyons contain stretches of deciduous riparian forest, with galleries of sycamore and oak. The Whetstones feature limestone outcrops in a band covering approximately 20 square miles. Such limestone often supports a variety of rare plants, either globally rare species or species far outside their usual distribution.

Wildlife: Common and Sensitive Species

The Whetstone Mountains form a critical linkage in the chain of Arizona's Sky Islands, connecting the Rincon and Santa Catalina Mountains in the north to the Huachuca Mountains and the Sierra Madre further to the south. This may allow large mammals such as jaguar to move northward unimpeded, and provides rest stops for migrating songbirds. Limestone formations in the Huachuca Mountains to the south support the rarest amphibian in Arizona, the Western barking frog; this species may live in the Whetstones as well. A recent inventory of the Whetstones found 5 amphibian and 37 reptile species, including at least 5 species which reach the northern limits of their distribution here. This abundance reflects the high diversity found at this overlap between the fauna of the Sierra Madre Occidental and the Rocky Mountains, and between the Sonoran and Chihuahuan Deserts. The spring-fed perennial streams in Wakefield and French Joe Canyons, among others, support rich riparian communities with frogs, turtles, and cottonwood and willow trees, along with a great diversity of birds. Black bears and mountain lions come down to drink, along with the dense population of white-tailed deer that attracts hunters, both human and feline.

Arizona ridge-nosed rattlesnake *(Crotalus willardi willardi)*: The Arizona Ridge-nosed Rattlesnake occurs in the Whetstone Roadless Complex and is listed as a Sensitive Species by the United States Forest Service (USFS) and as Wildlife of Special Concern by the Arizona Game and Fish Department (AZGFD). It inhabits oak woodland to pine-fir forests near rock crevices on the floors of southern Arizona's mountains. As a species that suffers from illegal collection pressures throughout its distribution, the Ridge-nosed Rattlesnake has been protected by the rugged and roadless character of the Whetstones.

Mexican Spotted Owl (*Strix occidentalis lucida*): The Mexican Spotted Owl occurs in the Whetstones and is listed as a Threatened Species under the Endangered Species Act, as a Sensitive Species by the USFS, and as Wildlife of Special Concern by the AZGFD. It inhabits dense old-growth mixed-conifer forests and mature riparian deciduous forest on steep slopes and is found in such forested mountains throughout Arizona.

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[14] 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.