Proposal in Support of the Ironwood Preserve

DRAFT

Sonoran Desert Conservation Plan | Pima County, Arizona | March 2000

Pima County
Board of Supervisors

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County Administrator
Chuck Huckelberry

Board of Supervisors Memorandum

March 21, 2000

Proposed Ragged Top and
Silverbell Mountains Ironwood Preserve

I. Introduction

This document provides a brief discussion of the need for the federal government to afford special protection for the Ironwood forest found in the Ragged Top and Silverbell Mountains.

Pima County has invited the Secretary of the Department of the Interior to discuss options for preserving the Ironwood habitat of the Silverbell Mountains, up to and including the creation of an Ironwood National Monument in Pima County, Arizona.

The proposed Ironwood Preserve would conserve one of the most valuable stands of the ancient Ironwood forest within the Sonoran Desert ecoregion.

II. Background

The Ironwood species, which can live to be over 800 years old, has served as a quiet but enormously important protector of species diversity within the Sonoran Desert. An Ironwood Preserve, in an area already primarily owned by the Bureau of Land Management, would honor this species for its role in upholding the ecosystem, and the Preserve would achieve practical conservation goals that are necessary to promote the recovery of the endangered pygmy-owl.

Prior studies have established the importance of cultural resources within the area. Bedrock outcrops and volcanic hills in the Ragged Top, Pan Quemado, and Silverbell mountains are unusual for the number of petroglyph or rock art sites that have been recorded. There is wide variation in the number and complexity of petroglyph sites, ranging from a handful of simple elements to hundreds of individual petroglyph elements, some of which are very complex.

At the south end of this region of prehistoric settlement lies Cocoraque Butte, which is listed on the National Register. This butte and its surrounding desert floor exhibits an extensive Hohokam village and numerous rock art panels that are exceptional for their complexity of design and the number of elements. Like many rock art sites, Cocoraque Butte is considered to be a traditional cultural place by the Tohono O'odham and Hopi Indian tribes.

More recently, a study led by Dr. Gary Nabhan of the Arizona-Sonora Desert Museum entitled *Desert Ironwood Primer* established that within the Sonoran Desert "the Ragged Top site [in the Silverbell Mountains] ... contributed the highest levels of species richness [of the study], with six of the ten plots having the highest levels within the entire region."

The Ragged Top and Cocoraque Rock areas, discussed in this paper, are identified by Dr. Nabhan as priorities for new protection and for strengthened conservation management, since "within the region as a whole, the [Ragged Top and Cocoraque sites] contribute the highest values of significance to biodiversity conservation."

The *Desert Ironwood Primer,* a binational research effort, is the first study that takes a comprehensive view of Ironwood habitats in both the United States and Mexico, evaluating the ecological and cultural resources supported by the ancient ironwood tree. Compared to Mexico, the United States offers limited protection to this important species.

A number of recommendations are offered by the authors, which Pima County supports as part of the Sonoran Desert Conservation Plan and as interim measures to offer protection to areas identified by the authors as having extraordinary ecological significance.

Excerpts from Dr. Nabhan's prestigious study are included, along with maps and photos of areas most in need of immediate protection as part of a proposed Ironwood Preserve.

Proposal One:

One proposal would protect both the Ragged Top and Cocoraque areas, and bring over 71,000 acres of land owned by the Bureau of Land Management into protective status.

A checkerboard of approximately 24,000 acres of State Land could contribute to the contiguity of the preserve land and bring important slope and xeroriparian areas into protection.

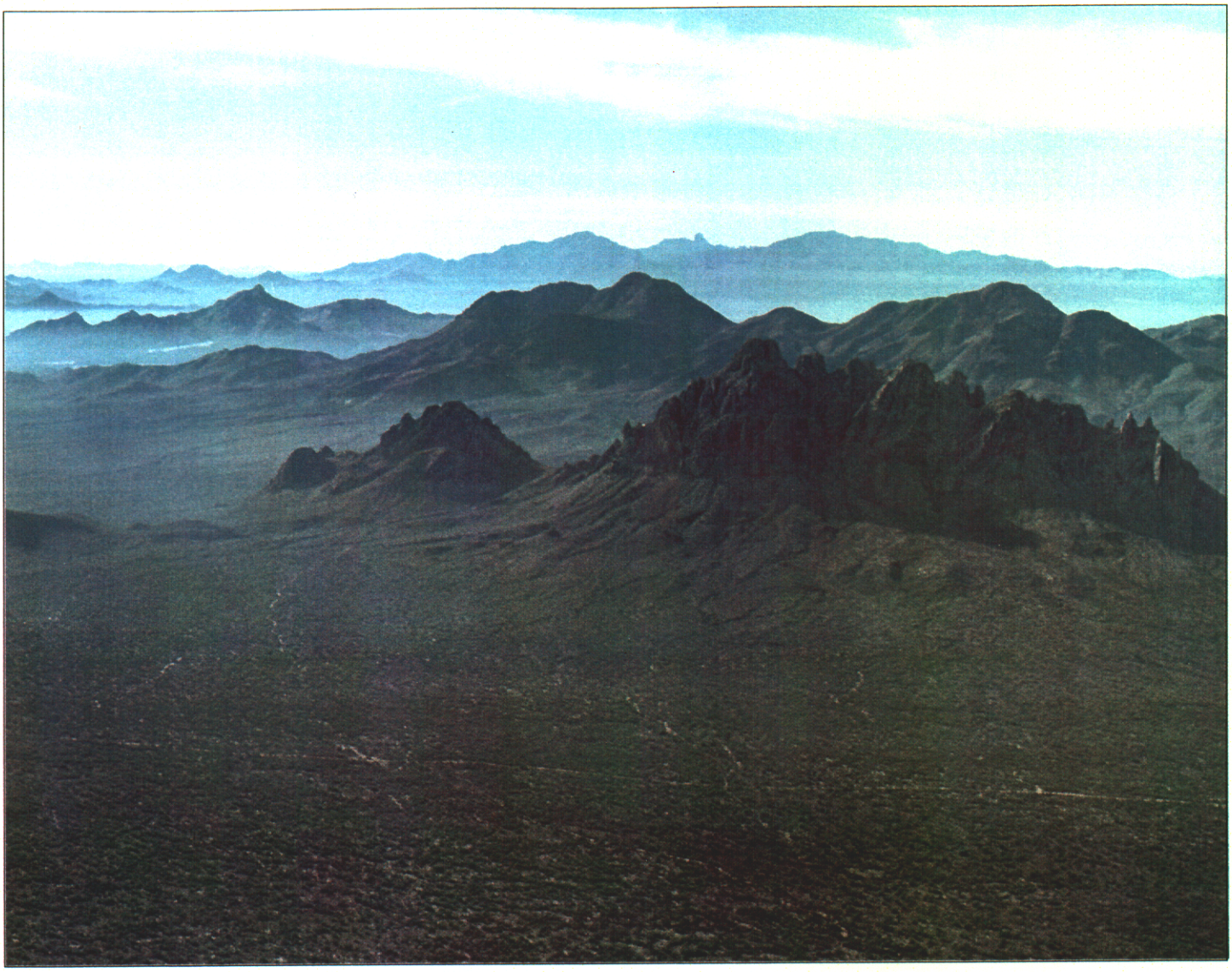
This proposal includes a buffer along the Tohono O'odham Nation which would protect important cultural resources and include the Cocoraque area that is so rich in biological and cultural resources.

Proposal Two:

A second proposal protects Ragged Top and brings approximately 57,000 acres of BLM land into protection.

Another 16,640 acres of State Land could add to an even more biologically sound preserve design.

The Ragged Top area, shown on the next page, is considered to offer the highest value in terms of species diversity and richness and in terms of the density of the Ironwood forest itself.



Ragged Top and Silverbell Mountain

Pima County, Arizona

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III. Ecological Significance

The *Desert Ironwood Primer* establishes the importance of ironwood as a habitat modifying keystone species and nurse plant that has a role in supporting the biodiversity of over 500 Sonoran Desert species, including the endangered cactus ferruginous pygmy-owl.

At the site specific level, biodiversity associated with ironwood can be even higher. The ironwood-bursage habitat in the Silverbell Mountains of Pima County is associated with 674 species, including 64 mammals and 57 bird species.

Some of the highlights from the report include:

- Ironwood "ranks among the most ecologically and economically important plant species in the region. ... It's influence stands out in two biotic communities:

  1) ancient cactus and legume forests of desertscrub on rocky bajadas and alluvium in adjacent valleys; and

  2) xeroriparian habitats, which occur as narrow curving corridors along ephemeral and intermittent watercourses in the driest portions of the Sonoran Desert."

- "Ironwood generates a chain of influences on associated understory plants, affecting their dispersal, germination, establishment, and rates of growth. ... Ironwood is the dominant nurse plant in some subregions of the Sonoran Desert."

- "The mere presence of ironwood and other legume trees can increase the number of bird species in desertscrub habitat by 63%."

- "Recent studies show that without the protective cover of the desert legumes, the distributional ranges of saguaro, organ pipe, and senita cactus would retreat many miles, to more southern, frost-free areas."

- "Protecting ironwood habitat in Pima County, Arizona, will benefit a different mix of native species than would be conserved in ironwood habitats currently being protected on the islands or coasts of the Gulf of California."

- "North of the U.S. - Mexico border, the highest ironwood densities we recorded per hectare came from Arizona Uplands sites in Pima County (Ragged Top, 35 trees/ha; Cocoraque and Saguaro National Park West 22 trees/ha)."

Ironwood Densities in Pima County	
Location	**Ironwood/Hectare**
Ragged Top (Silverbells)	35 ironwoods / hectare
Cocoraque (Brawley Wash)	21.25 ironwoods / hectare
Saguaro National Park West	21.25 ironwoods / hectare
Tortolitas	11.25 ironwoods / hectare
Mason Audubon Center, NW Tucson	11.25 ironwoods / hectare
Cabaza Prieta National Wildlife Refuge	11.25 ironwoods / hectare
Organ Pipe National Monument (cut areas)	2.5 ironwoods / hectare

- In general, densities in Mexico range from 1.25 to 30 trees per hectare. The report points out that "it appears ironwood densities ... are greater near the species' northernmost limits in the Arizona Uplands and Lower Colorado River Valley."

- "Lush riparian habitats, such as closed-canopy mesquite bosques, are often assumed to be the most threatened habitat type in this region."

- "However, mounting evidence indicates that the biodiversity associated with xeroriparian habitats has become just as imperiled."

- "At least 31 breeding bird species declined locally in riparian mesquite bosques within the last half-century. Thirty of these birds also spend part of the year in ironwood habitats."

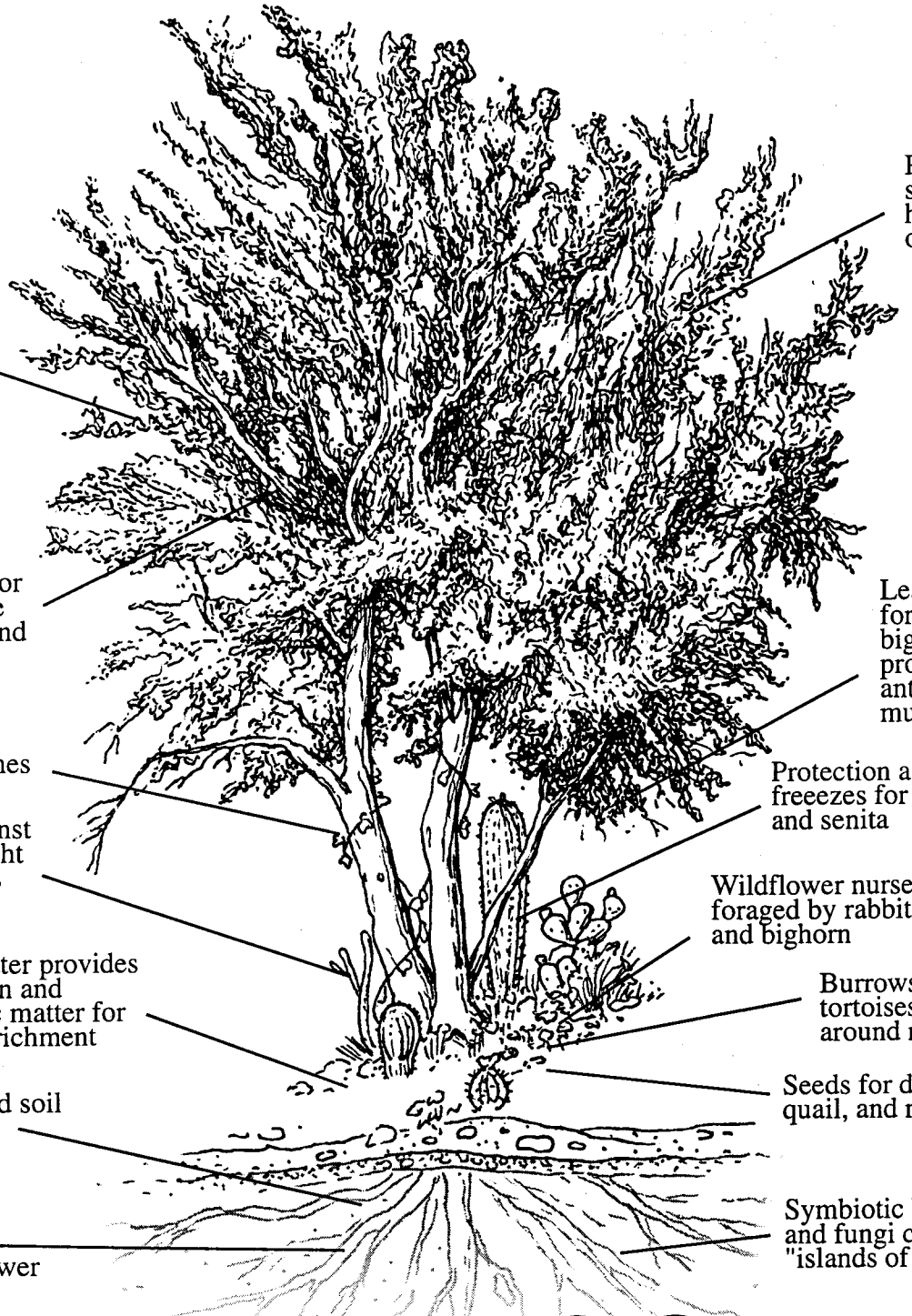
- "The Ragged Top site ... contributed the highest levels of species richness [of the study], with six of the ten plots having the highest levels within the entire region."

IV. Need for Greater Protection

The report points out that the United States offers limited protection for ironwood, compared to Mexico, despite the importance of the ironwood stands to the species itself, and to the larger Sonoran Desert system.

The Ragged Top and Cocoraque Rock areas are identified in the report as priorities for new protection and for strengthened conservation management, since "within the region as a whole, the [Ragged Top, Ironwood Picnic Area, and Cocoraque sites] contribute the highest values of significance to biodiversity conservation."

ECOLOGICAL VALUE OF IRONWOOD



IRONWOOD

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V. Cultural Resource Value of the Area

Portions of this area of the Avra Valley located to the west of the Los Robles and Brawley washes in the upper bajada and foothills of the Roskruge and Silverbell mountains have been surveyed for cultural resources. The region exhibits extensive systems of prehistoric settlement consisting of villages with public architecture, hamlets, farmsteads, agricultural fields, and a variety of specialized activity areas including rock art sites, reservoirs, quarry sites, resource processing sites, and hillside "trincheras" sites. More than 200 sites from the predominant prehistoric Hohokam period of A.D. 600-1450 have been recorded in the region, and two archaeological site districts have been listed on the National Register of Historic Places — Los Robles Archaeological District and the Cocoraque Butte Archaeological District.

At the north end of this prehistoric system is the Cerro Prieto Site, located in Pinal County just north of the Pima County line. Cerro Prieto dominates the landscape in this region rising some 700 feet from the valley floor and was clearly an important focal location for habitation and perhaps as a defensive refuge. This is a large and complex hillside "trincheras" village with more than 250 masonry rooms and numerous stone compounds, terraces, walls, and other features. Overall, the features at Cerro Prieto suggest a large, thriving early Classic period hillside settlement. Important questions remain to be addressed about its function in the Los Robles community as well as its role in regional cultural dynamics that extend from central Arizona to Sonora, Mexico.

South from Cerro Prieto in Pima County, is another significant but very different village site known as the Robles Platform Mound Community. This site appears to have been contemporaneous with the Cerro Prieto trincheras, occupied roughly from A.D. 1100-1300. Also a focal occupation site, the site is dominated by a rectangular, constructed earthen mound some 6-8 feet higher than the natural desert floor. Although no walls are visible, it is likely that there are buried adobe walls and pithouses present that define a substantial occupation during the Hohokam Classic period. Bedrock outcrops and volcanic hills in the Ragged Top, Pan Quemado, and Silverbell mountains are unusual for the number of petroglyph or rock art sites that have been recorded. There is a wide range of variation in the number and complexity of petroglyph site ranging from a handful of simple elements to hundreds of individual petroglyph elements, some of which are very complex. At the south end of this region of prehistoric settlement lies Cocoraque Butte, which is listed on the National Register. This butte and its surrounding desert floor exhibits and extensive Hohokam village and numerous rock art panels that are exceptional for their complexity of design and the number of elements. Like many rock art sites, Cocoraque Butte is considered to be a traditional cultural place by the Tohono O'odham and Hopi Indian tribes.

The western Avra Valley exhibits various elements of an extensive and complex prehistoric Hohokam community considered to be within the ancestral territory of the Tohono O'odham and certain Hopi clans. This region from the west bank of Los Robles Wash to the foothills of the Silverbell and Roskruge mountains retains significant cultural resource values and defines an intact cultural landscape created and used by the Hohokam during a time of apparent social, organizational and ideological changes that resulted in profound changes to this culture in southern Arizona.

Silverbell Mountain and Ragged Top

Pima County, Arizona

VI. Local Action in Response to Recommendations

Desert Ironwood Primer contains recommendations from the authors based on a decade of study by the science community.

The conservation related recommendations have been forwarded to the Science Technical Advisory Team for consideration as part of the Sonoran Desert Conservation Plan. County staff members have been directed to formulate a proposal for the Board's consideration which incorporates recommendations.

These include:

- Requiring assessments to determine the extent of ironwood destruction during the permitting process;
- Salvaging and relocating ironwood;
- Protecting the areas of highest density ironwood;
- Protecting and devising a corridor of stepping stone reserves within ironwood habitats for the benefit of species, including the pygmy-owl; and
- Planning and implementing protection strategies for ironwood as needed in wash, rocky slope and valley/plains ironwood habitats.

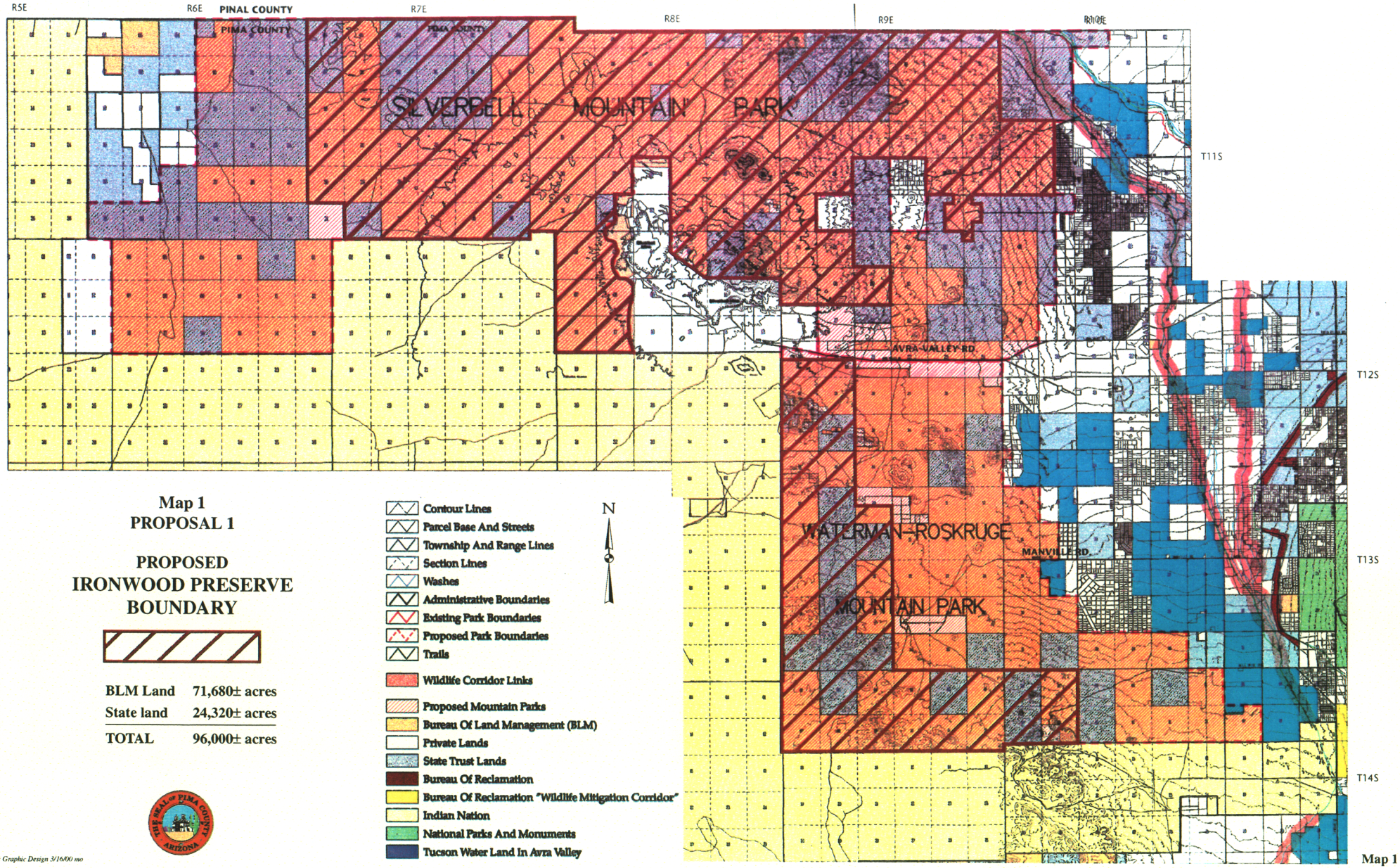
VII. Proposed Federal Action in Response to Recommendations -- Ironwood Preserve Proposal

In addition to actions at the local level, it is proposed that federal protections could be achieved through the establishment of an Ironwood Preserve. The U.S. Bureau of Land Management administers a large quantity of land in the Silverbell Mountains region of Pima County northwest of the Tucson Basin -- in fact, more than 100 sections. A large quantity of State Trust Land in excellent condition also exists in this area, and is interspersed among the BLM lands.

Maps that show land ownership and the range of options for the preserve design of the proposed Ironwood Preserve are found on the following pages. From the many options available, two proposals are mapped:

- **Proposal 1** -- The more comprehensive preserve proposal includes BLM land, some State Trust lands, and a buffer of BLM land along the Tohono O'odham Nation through the Waterman-Roskruge area to the Cocoraque Butte area. The total acreage is approximately 96,000, with over three quarters of that currently in BLM ownership.
- **Proposal 2** -- The second proposal mirrors the first, but excludes the land in the Waterman-Roskruge area. The total acreage is approximately 73,600. About 77 percent of that land belongs to BLM.

PROPOSED IRONWOOD PRESERVE



Map 1
PROPOSAL 1

PROPOSED IRONWOOD PRESERVE BOUNDARY

BLM Land	71,680± acres
State land	24,320± acres
TOTAL	96,000± acres

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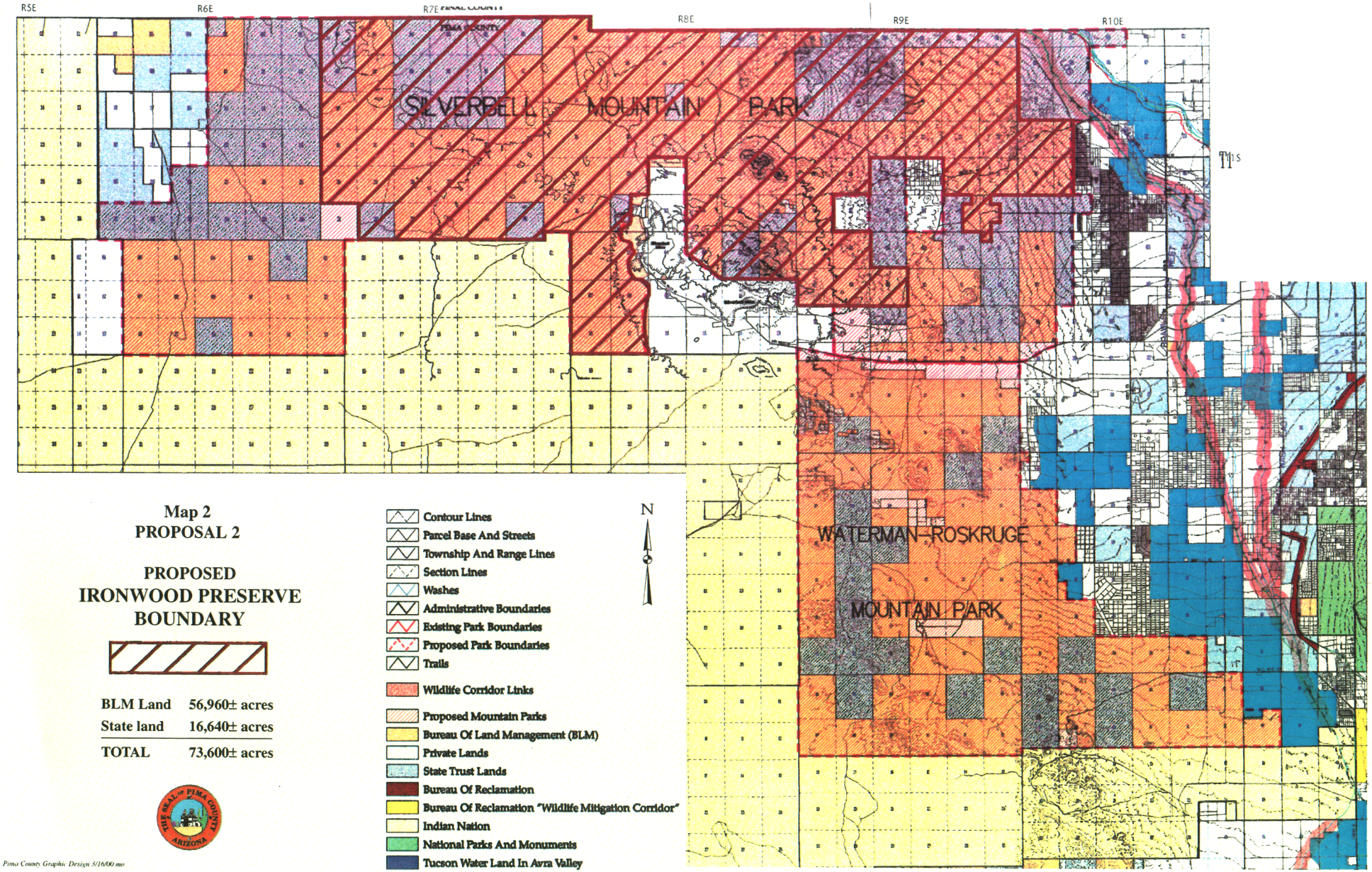
Map 1

PROPOSED IRONWOOD PRESERVE



Map 2
PROPOSAL 2

PROPOSED IRONWOOD PRESERVE BOUNDARY

BLM Land	56,960± acres
State land	16,640± acres
TOTAL	73,600± acres

- Contour Lines
- Parcel Base And Streets
- Township And Range Lines
- Section Lines
- Washes
- Administrative Boundaries
- Existing Park Boundaries
- Proposed Park Boundaries
- Trails
- Wildlife Corridor Links
- Proposed Mountain Parks
- Bureau Of Land Management (BLM)
- Private Lands
- State Trust Lands
- Bureau Of Reclamation
- Bureau Of Reclamation "Wildlife Mitigation Corridor"
- Indian Nation
- National Parks And Monuments
- Tucson Water Land In Avra Valley

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Map 2

VIII. Conclusion

The Ironwood forest has served as a quiet but enormously important protector of species diversity within the Sonoran Desert. A Ragged Top and Silverbell Mountains Ironwood Preserve would honor this species for its role in upholding the ecosystem, protect valuable cultural resources, and the Preserve would achieve practical conservation goals that are necessary to promote the recovery of the endangered pygmy-owl.

IX. Recommendation

I recommend that the Board adopt Resolution No. 2000- _____, A Resolution to Pursue the Establishment of a Ragged Top and Silverbell Mountains Ironwood Preserve Consistent with the Sonoran Desert Conservation Plan.

Respectfully Submitted,

C.H. Huckelberry
County Administrator

Attachment

RESOLUTION

PIMA COUNTY
RESOLUTION NO. 2000- _____

A RESOLUTION OF THE BOARD OF SUPERVISORS OF PIMA COUNTY, ARIZONA TO PURSUE THE ESTABLISHMENT OF A RAGGED TOP AND SILVERBELL MOUNTAINS IRONWOOD PRESERVE CONSISTENT WITH THE SONORAN DESERT CONSERVATION PLAN

WHEREAS, on March 2, 1999, the Board adopted the Sonoran Desert Conservation Plan in concept; and

WHEREAS, the Sonoran Desert Conservation Plan is the largest and most comprehensive regional multi-species conservation plan in the United States; and

WHEREAS, on December 3, 1998 the Board entered into Resolution 1998-250 with the Secretary of the Interior to:

(1) support the underlying purpose of the Endangered Species Act which is to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, and

(2) work with the Department of the Interior to develop the Sonoran Desert Conservation Plan; and

WHEREAS, in addition to addressing species conservation and federal compliance issues through protection of Critical Habitat along with other Sensitive Habitat and Corridors, the Sonoran Desert Conservation Plan encompasses six planning elements, including Riparian Restoration, Mountain Park expansion, Ranch Conservation, and Cultural and Historic Preservation; and

WHEREAS, under the Sonoran Desert Conservation Plan, 108 vulnerable species are being considered for protection, including 24 federally listed, proposed and candidate species, and including the endangered cactus ferruginous pygmy-owl; and

WHEREAS, under the Sonoran Desert Conservation Plan, 12 habitat types and 20 plant communities are being considered for protection, including riparian habitat which has been substantially degraded; and

WHEREAS, recent scientific findings published in the *Desert Ironwood Primer* establish the importance of ironwood as a habitat modifying keystone species and nurse plant that has a role in supporting the biodiversity of over 500 Sonoran Desert species, including the endangered cactus ferruginous pygmy-owl; and

WHEREAS, the ironwood-bursage habitat in the Silverbell Mountains of Pima County is associated with 674 species, including 64 mammals and 57 bird species; and

WHEREAS, *Desert Ironwood Primer* establishes that within the Sonoran Desert the Ragged Top site ... contributed the highest levels of species richness of the study; and

WHEREAS, additional findings that emphasize the importance of Ironwood to the Sonoran Desert ecosystem include that:

- "Ironwood generates a chain of influences on associated understory plants, affecting their dispersal, germination, establishment, and rates of growth. ... Ironwood is the dominant nurse plant in some subregions of the Sonoran Desert;" and

- "The mere presence of ironwood and other legume trees can increase the number of bird species in desertscrub habitat by 63%;" and

- "Recent studies show that without the protective cover of the desert legumes, the distributional ranges of saguaro, organ pipe, and senita cactus would retreat many miles, to more southern, frost-free areas;" and

- "Protecting ironwood habitat in Pima County, Arizona, will benefit a different mix of native species than would be conserved in ironwood habitats currently being protected on the islands or coasts of the Gulf of California;" and

- "North of the U.S. - Mexico border, the highest ironwood densities we recorded per hectare came from Arizona Uplands sites in Pima County (Ragged Top, 35 trees/ha; Cocoraque and Saguaro National Park West 22 trees/ha);" and

WHEREAS, the United States offers limited protection for ironwood, compared to Mexico, despite the importance of the ironwood stands to the species itself, and to the larger Sonoran Desert system; and

WHEREAS, the Ragged Top and Cocoraque Rock areas are identified by the science community as priorities for new protection and for strengthened conservation management; and

WHEREAS, the importance of cultural resources within the area has been established and includes a wide variation of petroglyph sites in the Ragged Top and Silverbell Mountains; and

WHEREAS, in addition to its valuable rock art sites, the Cocoraque Butte, listed in the National Register, is considered to be a traditional cultural place by the Tohono O'odham and Hopi Nations; and

WHEREAS, the U.S. Bureau of Land Management administers a large quantity of land in the Silverbell Mountains region of Pima County northwest of the Tucson Basin; and

WHEREAS, in addition to actions at the local level, Pima County proposes that federal protections could be achieved through the establishment of a Ragged Top and Silverbell Mountains Ironwood Preserve; and

WHEREAS, the Ironwood forest has served as a quiet but enormously important protector of species diversity within the Sonoran Desert; and

WHEREAS, preserve status, up to and including a National Monument designation would serve to honor this species for its role in upholding the ecosystem and the Preserve would achieve practical conservation goals that are necessary to promote the recovery of the endangered pygmy-owl; and

WHEREAS, Pima County has a longstanding demonstrated interest in open space protection and conservation objectives that reflect quality of life values important to the Southwestern United States and Arizona; and

WHEREAS, federal support for the Ragged Top and Silverbell Mountains Ironwood Preserve confirms the importance to communities of balancing natural and economic resources;

NOW THEREFORE BE IT RESOLVED THAT THE BOARD OF SUPERVISORS OF PIMA COUNTY, ARIZONA, as follows:

Requests that the United States of America through the Secretary of the Department of the Interior, consistent with the Sonoran Desert Conservation Plan, work cooperatively with Pima County to establish the Ragged Top and Silverbell Ironwood Preserve in the Silverbell Mountains.

PASSED AND ADOPTED THIS _____day of _____, 2000.

PIMA COUNTY BOARD OF SUPERVISORS

_____
Chair of the Board

WITNESSED BY:

_____
Secretary of the Department of Interior

APPROVED AS TO FORM:

_____
Deputy County Attorney

ATTEST:

_____
Clerk of the Board