IRONWOOD FOREST NATIONAL MONUMENT

WILDERNESS PROPOSAL

PRODUCED BY:

ARIZONA WILDERNESS COALITION

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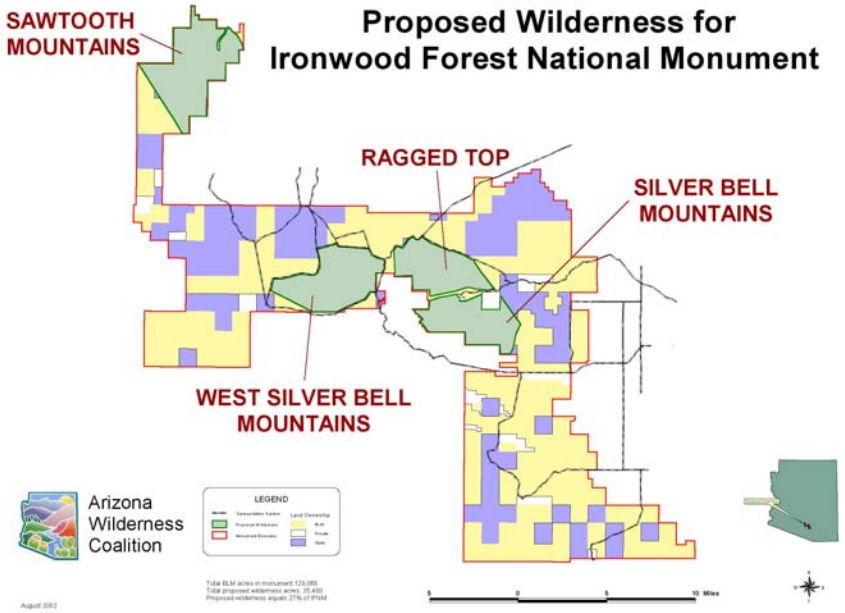
Summary

The Arizona Wilderness Coalition (AWC) recommends the following four areas for consideration as Wilderness Study Areas in the Ironwood Forest National Monument[1] (IFNM): Ragged Top (6,161 acres), Sawtooth Mountains (11,169 acres), Silver Bell Mountains (7,489 acres), and the West Silver Bell Mountains (8,598 acres). Protecting these areas as wilderness will assist the Bureau of Land Management in its responsibility to protect the objects of the Ironwood Forest National Monument. Our proposals are reasonable, considering the mandates of the monument proclamation to protect biological, geological, and cultural resources. Our proposals allow for the continued use and maintenance of facilities related to the management of livestock grazing, state game and fish administered wildlife waters, and mining operations under the provisions of the wilderness act in sections 4 (c) and (d). The AWC proposals make up less than 30% of the total monument, allowing for many other management areas within the Ironwood Forest National Monument. In the following documentation it will be shown that the four areas we are proposing for wilderness protection do meet the requirements for protection as Wilderness Study Areas (WSAs) in the current planning process.



The documentation will review the continuing obligations of the Bureau of Land Management (BLM) to consider lands for

[1] 129,068 acres is the BLM federal land that is part of the monument. The monument also contains 54,697 acres of State Trust Land and 6,012 acres of Private land for a total of 189,777.

Wilderness suitability and the justifications given by the AWC for lands within the Ironwood Forest National Monument to be considered for Wilderness Study Area designation. Also provided is a comprehensive review of how new information being provided differs from prior inventories conducted by the BLM under section 603 of the Federal Land Policy and Management Act (FLPMA) of 1976. The documentation will also discuss the role of wilderness in multiple use management, providing justification for wilderness being considered an avenue for multiple resource uses, not just recreation. The Wilderness Study Area proposals included within have been made under the guidelines of sections 102, 201, 202, and 205 of FLPMA. Maps identifying specific boundaries, photographic documentation, and detailed narrative descriptions of the areas' wilderness characteristics are provided in the unit descriptions as required by the USDI BLM Handbook *Wilderness Inventory and Study Procedures* H-6310-1 section .06 (E). Also included are descriptions of supplemental values such as "ecological, geological, or other features of scientific, educational, scenic, or historical value" as outlined in the BLM Handbook H-6310-1 and the Wilderness Act of 1964. P.L. 88-577; 16 U.S.C. § 1131(c) The included documentation and the BLM's legal mandate to include the public in its land use planning process as outlined in section 202 of FLPMA makes this citizen's wilderness proposal a valid land use recommendation, that must be addressed in the current Ironwood Forest National Monument land use planning process.

General Justifications for Wilderness Study Areas in Ironwood Forest National Monument

In the history of wilderness legislation and federal land management, the Federal Lands Policy and Management Act of 1976 made one of the largest contribution in efforts to retain federal lands in the public ownership and preserve these lands in their natural state. This was especially important to the protection of BLM lands that have wilderness characteristics. With passage of the Federal Lands

Policy and Management Act the BLM was mandated to inventory their lands for wilderness characteristics for the first time under section 603 of the FLPMA. This was not intended to be a one-time deal as many BLM employees in Arizona have been wrongly led to believe. It is clearly outlined in the BLM's own handbook H-6310-1.01 that wilderness inventories and Wilderness Study Area designation are within the realm of land use planning in sections 201 and 202 of FLPMA as interpreted from the following passage:

> The Secretary shall prepare and maintain on a continuing basis an inventory of all public lands and their resource and other values (including, but not limited to, outdoor recreation and scenic values), giving priority to areas of critical environmental concern. This inventory shall be kept current so as to reflect changes in conditions and to identify new and emerging resource and other values. The preparation and maintenance of such inventory or the identification of such areas shall not, of itself, change or prevent change of the management or use of public lands. P.L. 94-579, § 201(a), 43 U.S.C. § 1711(a).

This passage has been further interpreted by the BLM to give justification for wilderness inventory as outlined in the 2001 U.S. Department of the Interior, Bureau of Land Management, *Wilderness Inventory and Study Procedures Handbook* H-6310-1 sec .06 (A) "The BLM will prepare and maintain on a continuing basis an inventory of public lands to determine the presence or absence of wilderness characteristics," this agrees with the mandates set forth in FLPMA above. Further direction was given to the BLM from their handbook to consider lands that may have wilderness characteristics not addressed in current land use plans: "lands in externally generated proposals that document new or supplemental information regarding resource uses and condition of the lands not addressed in current land use plans and/or prior wilderness inventories." BLM Handbook H-6310-1 sec. .06 (d) This direction has given the Arizona Wilderness Coalition the avenue for providing citizen wilderness inventories and proposals in the IFNM planning process.

Multiple Use Management

The Bureau of Land Management was directed to manage its lands under the multiple use philosophy with the passage of the Federal Lands Policy and Management Act of 1976. This direction and the public participation mandate challenged the BLM to change its form of management. Instead of managing only for extractive uses, such as timber and mining, the BLM began to actively manage lands to protect naturalness, and facilitate recreation. The Presidential proclamation of 5 new national monuments here in Arizona and in other states has also given a challenge to the BLM. This new challenge is to manage these national monuments for the "proper care and management of the objects to be protected," as named in the June 2000 Presidential proclamation for Ironwood Forest National Monument, under the authority of the American Antiquities Act of 1906 (16 USC 431-433). Many of the philosophies and techniques of multiple use management will be a great assistance to the BLM in their new responsibilities to protect the objects of a national monument. This does not mean that management of the monument can be done using only multiple use techniques. These two excerpts from the definition of multiple use in FLPMA provide justification for wilderness as a valid form of multiple use management.

> "''multiple use'' means the management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people"
>
> "…including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values." P.L. 94-579, § 103(c); 43 U.S.C. § 1702(c)

Parts of the multiple use definition were also addressed as elements of the definition of wilderness as in the Wilderness Act of 1964, "may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value." P.L. 88-577; 16 U.S.C. § 1131(c) The similarity of these two laws is not a coincidence; the Wilderness Act fulfills an important niche in the scheme of multiple use, it protects those resource values explained in the multiple use definition. This

definition also explains that all activities should occur, "without permanent impairment." P.L. 94-579, § 103(c); 43 U.S.C. § 1702(c) The obligation of the BLM to facilitate the multiple use of the public lands "without permanent impairment" can best be achieved by protecting areas as wilderness. Wilderness has no permanent improvements and is managed to preserve the natural conditions of the land. THE BLM's 2001 handbook H-6310-1 sec .06 clearly states, "Wilderness is a resource which fits within the framework of multiple use on the public lands." This is interpreted to mean that wilderness has a place in the future management of the monument. Furthermore, wilderness protection should not only be used as a management technique to facilitate recreation as it has traditionally been viewed, but used as a way to, "prevent unnecessary or undue degradation" of the lands in the monument. P.L. 94-579, § 302(b); 43 U.S.C. § 1732 (b) The BLM can use wilderness as a tool to fulfill this mandate.

The BLM must consider the intention of the Wilderness Act in meeting the needs of Americans and Arizonans. Meeting America's "present and future needs", as described in the multiple use definition above, should take into account that population has grown by 40 percent in Arizona since 1990 (US Census Bureau 2000). If Arizona continues to grow at this rate, wilderness will become an enduring resource as a place for citizens to seek solitude from the millions of people inhabiting the Phoenix and Tucson areas. The BLM handbook H-6310-1 sec .06, addresses the supplemental values of wilderness for people and for protecting other resources such as plants and wildlife: "In addition to its value as setting for primitive recreation or solitude, wilderness can provide a range of benefits to other resource values and uses which are of significance to the American people." In section 2(a) of the Wilderness Act of 1964 congress addressed similar intentions to "secure for the American people of present and future generations the benefits of an enduring resource of wilderness". It was the intention of congress to protect valuable lands, as wilderness in the instance of such population growth as Arizona is experiencing. Arizona's Wildlands and especially wildlands within national monuments should be preserved as wilderness to protect the resource values for the expanding population of Arizona.

The AWC believes that the order of operations for management of the monument starts with the January 9th 2000

proclamation and any activity or management option should be in full agreement with the protection of the objects identified in the monument proclamation. Multiple use management techniques can be used to manage Ironwood Forest National Monument, but not all uses can or should occur within the monument. Furthermore, wilderness designation as explained above will be one part of the land management mosaic that the BLM should use to protect the objects of the Ironwood Forest National Monument.

Examples of Wilderness in National Monuments

The Organ Pipe Cactus National Monument, just south and west of the Ironwood Forest NM, was created by Franklin Roosevelt on April 23, 1937, to protect the rare Organ Pipe Cactus and 26 other cacti species. The uniqueness and importance of the area is in the rarity of the Organ Pipe Cactus, and the even more rare Senita cactus, both of which are found nowhere else in the United States. The Nikols turk's head cactus is in the same situation as the Organ pipe cactus, as it is a sensitive species within the Ironwood Forest NM. The National Park Service now manages 312,000 acres of Organ Pipe NM as Wilderness, as designated in 1978 (Browning et al 1988). Organ pipe NM is 330,668 acres making it ninety four percent wilderness. The objects in both Organ Pipe Cactus NM and Ironwood Forest NM are very similar and the AWC believes that Organ Pipe Cactus NM sets a good example of how wilderness can be used to effectively protect the objects of the monument as designated under the Antiquities Act of 1906.

Examples of National Monuments and Parks using wilderness to protect valuable resources abound here in Arizona and the Southwest. The following parks were all National Monuments to begin with and are listed with the percentage of total land as wilderness: Joshua Tree National Park 54%, Saguaro National Park 78%, Petrified Forest National Park 53%. In many of these parks and monuments previously abused lands have been restored and enhanced to meet wilderness criteria. The various justifications listed here should provide the BLM, with more than adequate justification for considering and using wilderness as a tool to protect the objects of the Ironwood Forest National Monument.

New and Supplemental Information

Section One

The Arizona Wilderness Coalition is providing Wilderness Study Area proposals at the proper time and in the appropriate format as outlined by the BLM's directives. The following section covers the new information requirements for the AWC proposed lands to be considered by the BLM for WSA protection. The Arizona Wilderness Coalition believes that there is general new information that can be presented for all areas, and specific supplemental and new information for each specific proposed unit. As mentioned above in the general justifications section, this direction comes from the BLM Handbook H-6310-1 sec .06 (d) stating, "lands in externally generated proposals that document new or supplemental information regarding resource uses and condition of the lands not addressed in current land use plans and/or prior wilderness inventories." This means that the monument proclamations obviously change the resource management of the lands within the monument, and new wilderness inventories should be done to address the changing management needs. This also mandates that the BLM consider the Arizona Wilderness Coalition proposals as they do provide both new and supplemental information. The process of maintaining a current inventory should now be on going after the monument designation, due to changes in management such as specified in the June 9th 2000 Ironwood Forest National Monument proclamation, that states:

> All Federal lands and interests in lands within the boundaries of this monument are hereby appropriated and withdrawn from all forms of entry, location, selection, sale, or leasing or other disposition under the public land laws, including but not limited to withdrawal from location, entry, and patent under the mining laws, and from disposition under all laws relating to mineral and geothermal leasing, other than by exchange that furthers the protective purposes of the monument.

The BLM handbook H-6310-1 and the Ironwood Forest national Monument proclamation mandates work together in that the proclamation changes the management direction of the 129,068 acres of BLM land and that continuing inventories must be done to identify how to protect the objects of the monument. This information should be

consider as “New Information Suggesting That an Area of Public Lands Has Wilderness Characteristics.” as outlined in BLM Handbook H-6310-1.06 (E). The following is a list of specific “New Information” regarding resource uses and management direction:

1. The June 2000 Ironwood Forest National Monument proclamation changes the management of the 129,068 acres of federal land from an area of many multiple uses to an area were the primary management goal is protection of the objects identified in the proclamation.
2. The availability of new mineral leases is no longer permitted on monument lands, which was a conflicting use addressed in the section 603 wilderness inventories.
3. Many and in some cases all unpatented mineral claims have been abandoned in the proposed Wilderness Study Areas and intensive study areas from the 1980s.
4. The general understanding of Sonoran Desert ecology and the proper methods for managing functioning ecosystems is more adequately understood and valued than it was 10-20 years ago when past inventories were conducted.
5. Many Threatened and Endangered Species have been identified since the last wilderness inventories and some of their valuable habitat exists within the AWC proposed WSAs.
6. Off Road Vehicle (ORV) use has increased dramatically in the proposed WSAs since the last inventory process to such an extent that the BLM made ORV route designations in 1989. These designations did not evaluate routes in areas that potentially contained wilderness characteristics
7. The Population of Arizona has increased by 40% since 1990.

These seven points and the detailed information contained within the four individual unit proposals provide substantial proof that wilderness characteristics do exist and should be adequately considered in the current planning process.

Biological Values and Potential

Supplemental values, Section Two

By: Mike Seidman

Ironwood Forest National Monument protects a prime example of Sonoran Desert and, at 125,000 acres, with mountains and hills scattered amongst broad valleys, it may be a large and diverse enough chunk to support a functioning landscape. It is, according to The Nature Conservancy, among the 20 most important Sonoran Desert sites in Arizona (Marshall et al. 2000). Within its borders are 474 species and subspecies of plants, 8% of which do not occur in the nearest protected desert areas, the Tucson Mountains and Organ Pipe National Park. A preliminary assessment of wildlife found up to 177 vertebrate species and 821 invertebrates. This includes a variety of sensitive species such as Desert bighorn sheep, Desert tortoise, California leaf-nosed bat, Mexican long-tongued bat, Lesser long-nosed bat, Western red bat, Merriam's mesquite mouse, Rufous-winged sparrow, Tucson shovel-nosed snake, Ground snake, Pima pineapple cactus, Nichol's turk's head cactus, and 3 species of talussnail. The Monument also includes historic and potential habitat for the endangered Cactus ferruginous pygmy owl. (Dimmitt et al. 2000)

Five desert mountain ranges define the monument: —the Roskruge and Waterman Mountains, the Silverbell (including Ragged Top), West Silverbell, and, on the fringe, the Sawtooth Mountains. The coarse, well-drained soils of these mountain ranges, and the bajadas that come off them, support diverse vegetation in high densities-- small leguminous trees such as ironwood and palo verde and large cacti such as saguaro. The Monument supports the highest densities of ironwood trees in the Sonoran Desert, especially in upper parts of north and west facing bajadas. While Ironwoods are associated with a great many species throughout their range, ironwoods in Ironwood Forest National Monument support more plant species than anywhere else. Ironwoods and other desert legumes are so important as nurse trees that many cacti, including saguaros, might not survive in our climate without them (Nabhan et al. 2000).

Ragged Top, a partially isolated mountain within the Silverbell Range, and a major focus of public attention for its rough outlines and mysterious interior spaces, contains 393 plant taxa, as the rugged terrain creates a plethora of

microclimates. A few plants from moister periods 10,000 years ago, notably Arizona rosewood and scrub oak, persist near the summits of Ragged Top and a few other mountains, taking advantage of micro sites that direct water to them. Open valleys between ranges contain vegetation of the hotter, flatter Lower Colorado subregion, primarily Creosote bush and White bursage. Trees in the valleys are mostly restricted to washes. Plants and animals that prefer these more open areas include many species at the eastern edge of their range: Banded sand snake, Desert horned lizard, Desert iguana, Leaf-nosed snakes, Long-tailed brush lizard, and Sidewinders. (Dimmitt et al. 2000).

A small population (less than 100 animals) of Desert bighorn sheep occupy the Monument. Human impacts have made this the last Bighorn sheep population in Pima County, living on an island in a sea of human development. This in itself is an impediment to long-term viability as there are no nearby populations with which to exchange genetic material or to re-colonize habitat in the event of a die off from disease or other factors. Citing Gionfriddo and Krausman (1986), Bristow et al. (1996) agree, “The future of this native sheep population is of particular concern due to this isolation. Isolation due to human encroachment is considered one of the most important factors limiting bighorn sheep populations. If adequate precautions are not taken the desert bighorn sheep population of the Silver Bell and West Silverbell Mountains are in jeopardy”.

Bighorn require large areas to satisfy their needs for food, water, reproduction and raising of lambs, and the avoidance of predators. Without access to habitat outside the Monument, these needs must all be supported by the Monument itself. And while these needs may have been satisfied by the Monument in its pristine state, increasing recreational use, and the proliferation of roads capable of providing access to previously undisturbed areas, are likely over time to create barriers to their movements. As their range becomes fragmented, their numbers dwindle.

Bighorn sheep are prone to rigid behavior patterns. They may abandon an area with high human activity (Bristow et al. citing Jorgenson 1988), while stress, as measured by increased heart rate, may increase with increasing proximity to roads (MacArthur et al. 1979).

Ewes tend to be more sedentary than rams, often (in Ironwood at least) remaining on a single mountain and only moving to lambing grounds to give birth. Lambing grounds, which may be used year after year, are selected based on the need to protect offspring. Rams, on the other hand, outside the breeding season, tend to prefer lower, flatter areas further from escape terrain but with high quality, abundant forage. Young rams follow the largest rams to such sites. If these sites are lost, either to habitat destruction or to human activities, rams may be slow establishing new ones.

Rams trend to move more and one ram has been documented moving between the Silverbell, Waterman and Roskruge Mountains. The Roskruge Mountains, unable to support a resident bighorn population, may serve as a corridor between the Silverbells and the Baboquivari/Coyote mountains (Lee et al. 2000).

Although we are unaware of evidence indicating recent or regular movement to the Sawtooth Mountains, bighorn have occurred there in the past and might be considered for a transplant if some roads were closed (Lee et al. 2000) and connections to the Silverbells were protected. Expansion on to the Tohono O'odham reservation is also possible.(The study about to get underway will indicate whether any movement into and out of the Sawtooths is currently occurring). The BLM needs to strongly consider the acquisition of state and private lands that may be impeding their movements. Once again, it is reiterated (Geist 1971), "If traditional movement patterns are interrupted for a generation, they may be lost to the population".

While bighorn sheep do not usually require Wilderness to survive, they are clearly vulnerable to the presence of people and roads. Given the relatively small size of the Monument, the rarity of lambing sites, and the lack of nearby populations or even accessible habitat, it is essential that habitat on the Monument be managed to prevent fragmentation. To quote Bristow et al. one more time:

> "Past experience relative to impacts of human encroachment on desert bighorn sheep populations suggest a conservative approach is necessary to safeguard against extirpation. Intensive management

will be necessary to ensure the long term viability of this important desert bighorn sheep population”

Wilderness designation for at least the Silverbell, West Silverbell, Ragged Top and the Sawtooth Mountains represent a necessary first step, as it will curtail easy access to the core bighorn habitats (especially if most roads approaching these mountains are also eliminated). While necessary, Wilderness designation is not likely to be sufficient to protect bighorns in the long run. This will require the identification and protection of movement corridors between ranges that will allow rams unrestricted access to foraging areas and ewes to lambing grounds. It will also require closing such sites to human visitation, at least seasonally.

Desert tortoises are common within the monument, particularly in areas with boulders or incised washes. They occur with greatest frequency in the Sawtooth, West Silverbell, and Silverbell Mountains. Highest density is in the West Silverbells and Ragged Top but they are common in down cut washes in the flats as well, where they construct burrows in the banks (Averill-Murray, A. and R.C. Averill-Murray. 2002).

Tortoises too would benefit from Wilderness designation. Less access will result in fewer tortoises being taken for pets or being released, possibly with disease, after having been a pet.

The BLM must also keep in mind tortoise use of washes as another reason for prohibiting driving in washes. Washes tend to have more cover and serve as areas where many animals, from quail to peccaries and deer, regulate their body temperatures. Stress caused by vehicles could impair their fitness.

In conclusion the biological values of the Ironwood Forest are one of the major reasons for its creation. The Ironwood tree itself holds a sacred place in all desert travelers’ hearts, human and non-human alike. Attempting to protect and even enhance the biological values of the monument is a challenge, but with proper research, respect, and a management vision that looks beyond how to juggle recreational use with the protection of the objects, it can be done. Wilderness is just one tool to be used in the land management mosaic required, but it is an effective

tool for protecting core areas, such as the Silver Bell Mountains and Ragged Top bighorn sheep lambing areas, the large Ironwood trees of the West Silver bells, and the unique plants, animals, and rocks of the Sawtooth Mountains.

Roads

The Ironwood Forest National Monument planning process is unique from a wilderness standpoint. This uniqueness comes from the June 9th 2000 monument proclamation, in the statement "The Secretary of the Interior shall prepare a transportation plan that addresses the actions, including road closures or travel restrictions, necessary to protect the objects identified in this proclamation." The AWC believes this is unique because it allows the BLM to close roads within the monument lands for the sole purpose of protecting the objects of the monument. This also provides another piece of new information that affects resource uses and management within the monument. A number of studies authored by prominent biologists, ecologists and conservation biologists with peer-reviewed publications demonstrate that roads are one of the most significant causes of the loss of native biodiversity. If the BLM intends to protect monument objects, which are mostly of ecological, biological, and archeological nature, then closing and restoring roads should be the first step, as is suggested in the literature. Two papers written by Kim Crumbo, AWC Grand Canyon Regional Coordinator, outlining and providing comprehensive references that support these conclusions have been provided in appendix A as supplemental information.

This uniqueness and the facts presented about the impacts of roads should make wilderness a suitable alternative even for monument lands that contained roads at the time of the proclamation. In the designation of the first wilderness areas (in the 1964 Wilderness Act itself) and in scores of precedents as it has subsequently designated additional wilderness areas, Congress has included lands that have been impacted by prior human activities. This includes old mining prospects and old mines, lands damaged by off-road vehicle use, and old "roads" (ranging from simple one-time vehicle tracks across the landscape to constructed roads suitable for highway vehicles)." (Scott 2001). An example of congress's intention for the

National Wilderness Preservation System is the designation of the Great Swamp Wilderness just outside New York City. The Great Swamp Wilderness in New Jersey was created out of two units that were split by a paved county road with bridges and all. After designation by congress in 1968 the road was removed and restored to make one wilderness unit of 3,660 acres (Scott 2001). This is an excellent example of the intentions of congress, due to it being designated in 1968 by many of the same representatives that passed the original Wilderness Act in 1964. It proves that if an area or two adjacent areas have wilderness potential, but lack roadlessness or have some human improvements, restoration can be used to restore wilderness character to protect the integrity of all lands in the proposed area.

With regards to the entire monument, roads and trails must be assessed using some form of definition. In the June 2000 Ironwood Forest National Monument Proclamation the BLM is directed to close all routes not meeting the definition of a road. This is made clear from the statement, “For the purpose of protecting the objects identified above, the Secretary of the Interior shall prohibit all motorized and mechanized vehicle use off road, except for emergency or authorized administrative purposes.” The AWC believes the definition as outlined in FLPMA should be used as it will assist the BLM not only in development of a travelway plan, but also in identifying roadless units for wilderness inventory.

> The word ‘roadless’ refers to the absence of roads, which have been improved and maintained by mechanical means to insure relatively regular and continuous use. A way maintained solely by the passage of vehicles does not constitute a road.” (H.R. Rep. No. 94-1163 at page17 (1976))

This definition is also more fully explained in the BLM handbook H-6310.13 (A) 1. The Arizona Wilderness Coalition believes that the BLM should use this definition and its interpretation in their Handbook H-6310. On July 9th 2002 the AWC and the Grand Canyon Chapter of the Sierra Club sent a letter to Tony Herrell, Ironwood Forest Manager, outlining our interpretation of Congressional and Presidential laws handed down to the BLM relating to roads in IFNM, this letter is attached as appendix B.

Furthermore, the destruction of monument objects primarily occurs along roads in the Ironwood Forest National Monument. Pictures [(IFNM-1-72)(IFNM-1-76)(IFNM-1-114)(IFNM-1-120)] show numerous spots along the monument roads and routes where destruction of objects of the monument has taken place. Recently much of this destruction has occurred due to UnDocumented Immigrant traffic (UDI). It has been made clear by many of the BLM personnel that UnDocumented Immigrant traffic and the actions of the "coyotes" are causing the most resource impacts in the monument[2]. The Ironwood Forest National Monument has seen dramatic increase in UDI and coyote traffic. Most of the traffic occurs on and around roads in the monument. The ability of the BLM to deal with this problem is very limited.

Other impacts to monument objects are shooting, illegal plant and animal harvesting, trash dumping, and off road vehicle travel, all of these actions are facilitated by road access to remote regions within the monument. Management of the monument would be tremendously simplified with a limited road network, as proposed by the Sierra Club and various Ranchers, homeowners, and other conservation organizations. A limited road network would allow monument personnel to more intensely patrol the public roads, do restoration and maintenance work as well as offer interpretation and various other visitor services to protect the objects for which the monument was designated to protect. Closing roads is a very contentious issue, especially inside a new national monument that encompasses lands and roads that have previously been used in ways that do not protect features of natural and cultural significance.

The BLM has been given a challenge of managing the Ironwood Forest NM and it is in this time of the planning process and the years to come that the BLM should be informing the public of its mandate to prevent uses that do not further the protection of the objects for which the monument was created. Off road vehicle users and target shooters should be directed to other areas outside the monument to facilitate long-term protection of the monument objects. The construction of roads and the continued use of

[2]"Coyotes", is the name given to individuals who reside in the U.S. and charge illegal immigrants for picking them up in various locations as they cross the border

unmanaged motorized trails and routes will continue to degrade the objects of the monument, as all literature points to roads as a number one factor in the loss of species and their habitats.

Conclusion

The documentation provided here has reviewed the continuing obligations of the Bureau of Land Management (BLM) to consider lands for Wilderness suitability and the justifications given by the AWC for lands within the Ironwood Forest National Monument to be considered for Wilderness Study Area designation. The topics of how wilderness fits within the framework of multiple use management have been provided to assist the BLM in finding justification for considering wilderness as a viable option in multiple use. The general supplemental wilderness values of the monument and its potential wilderness study areas have been discussed and support the obligation of the BLM to consider our proposals. New information regarding lands that may have wilderness characteristics, with rationale for how it differs from past inventories has also been provided. Overall, it is the belief of the Arizona Wilderness Coalition that we have meet the requirements outlined in the USDI BLM Handbook *Wilderness Inventory and Study Procedures* H-6310-1. The issue of roads has been addressed separately to help the BLM understand how critical a limited and conservative public transportation plan will protect and enhance the values and the objects of the monument. Finally, the Arizona Wilderness Coalition Proposals are reasonable and allow for the continuance of existing uses under the “minimum requirement” standards outlined in the Wilderness Act and BLM’s handbook, *Interim Policy for Lands Under Wilderness Review* H-8550-1. The Tucson BLM produced a “Pre-Plan Analysis for the Ironwood Forest National Monument” in February of 2001, where the range of alternatives for a management plan was outlined. It mentions a few different alternatives, two of which are an “Enhanced Protection and Conservation Alternative” and a “Enhanced Multiple Use Alternative.” (p.34) The Arizona Wilderness Coalition recommends our proposals become part of both alternatives, as wilderness fits within the scope of both.

The Ironwood Forest National Monument has been created because it is unique and biologically important in the

landscape of the Sonoran Desert. Protecting areas as wilderness is the ultimate tool for the people of Arizona to preserve this natural heritage for future generations, as a place with roads and ORV trails will not stand the test of time and all the uses and abuses that come along with them. Many ask, “What added protection does wilderness provide over monument protection?” Wilderness offers permanent protection from future road development, motorized trails, and other improvements that are inconsistent with the primitive non-mechanized philosophies of the Wilderness Act. Wilderness can only be designated through Congress, which means it can only be undesignated by Congress. Monument management plans are done every 15 to 20 years and can change management on various different levels. Development of camping areas, visitor services, or new scenic loop roads could be suggested in a management plan 20 years from now. This is where the permanent protection of wilderness areas in a monument prevents any developments in those areas, leaving them wild. Renowned western writer and historian Wallace Stegner, explains why wildness and wilderness is so important in the following quote, “We simply need that wild country available to us, even if we never do more than drive to its edge and look in. For it can be a means of reassuring ourselves of our sanity as creatures, a part of the geography of hope.” The Sawtooth Mountains, the Silver Bell and West Silver Bell Mountains, and Ragged Top all have wildness and deserve the protection of wilderness to save these great places.

Sawtooth Mountains

Unit Description:

The Sawtooth Mountains are located about 8 miles southwest of Eloy and 16 miles south of Casa Grande. A part of the unit is in the Santa Cruz Flats. The Sawtooth Mountains are small, rugged, volcanic mountains with many jagged peaks, giving a saw-toothed appearance. The unit varies from rocky peaks and ridges to bajadas and plains. The range is 1,200 feet above the flats. A variety of small and large arches can be found on the numerous sharp ridgelines. Palo verde-saguaro association with mixed desert scrub and creosote-bursage communities make up the vegetation. Some areas have been disturbed due to past mining exploration or recent off road vehicle travel, but overall the area has outstanding wilderness characteristics in the mountains and on the bajadas.

Wilderness Characteristics

Size: 11,169 acres with the potential to be 11,738 acres with acquisition of state trust lands.

Naturalness: The Sawtooth Mountains proposed wilderness unit "generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable" as outlined in The Wilderness Act of 1964. The photographic documentation included within this report shows the natural condition from various vantage points within and outside the proposed unit. See photos: IFNM-1-35; IFNM 1-30,31; IFNM-1-83 In past BLM inventories the natural character of the Sawtooth Mountains has been stated as, "The accumulation of imprints elsewhere in the unit, though noticeable at times, is not significant enough to adversely affect the apparent naturalness of the remainder of the unit (USDI November 1980). The documented imprints were located mostly in the northwest corner of the unit in these past inventories. In recent citizen's inventories conducted by the Arizona Wilderness Coalition in 2002 these imprints have begun to return to a natural condition (see photos: IFNM-1-63,64) the routes/roads that at one time lead to the noticeable impacts are now substantially re-vegetated.

Guzzlers: Further exclusions in past inventories were made for a route that was found to meet the definition of a road that lead to a Arizona Game and Fish water catchment/guzzler in township 9 south range 6 east, section 26 (USDI November 1980). Two other water catchments exist in the Sawtooth Mountains within the unit's boundary. The BLM Handbook H-8550-1 Interim Management Policy for Lands Under Wilderness Review gives further direction in regards to water catchments/guzzlers in chapter 3, section G.(4), "Certain permanent installations may be permitted to maintain or improve conditions for wildlife (USDI 1995)." Also in Chapter 3 section G.(4)(a) The handbook directs that "Guzzlers may be maintained…" This direction given to the BLM does not make the existence of water catchments a factor in determining naturalness if they enhance the wilderness characteristics of the area by maintaining native wildlife populations (USDI 1995). Furthermore, in

appendix D. of handbook H-8550-1 the BLM interprets the "…minimum requirements for the administration of the area…" as stated in The Wilderness Act of 1964 section 4(C). In this appendix direction is given on how range and big game wildlife developments are to be managed under the "Minimum Data Requirements" and the "Maximum Acceptable Impacts" standards (USDI 1995). These standards and the studies to determine how water catchments/guzzlers enhance native wildlife populations would be applied to all existing wildlife waters with designation of the Sawtooth Mountains as a Wilderness Study Area (WSA).

Outstanding Opportunities for Solitude or Primitive and Unconfined Recreation:

The Sawtooth Mountains proposed wilderness unit possesses both opportunities for solitude and primitive and unconfined recreation. The opportunities for both exist within all or most of the unit. The BLM's Wilderness Inventory and Study Procedures Handbook H-6310-1.22 section (b)(1) gives direction on the assessment of solitude in inventory units. In this section five features for evaluating solitude are given.

a. Size and configuration: The unit meets the 5,000-acre size criteria, and it is not long and narrow or have irregular extensions or cherrystems.
b. Topographic screening: There are many canyons, ridges, basins, and mountainsides and tops where the topography provides outstanding isolation and solitude from other visitors
c. Vegetative screening: In the bajadas just below the rugged mountains the vegetative screening is exceptional with a diversity of vegetation ranging from stands of saguaro and palo verde to wide expanses of creosote and bursage. Inside and along washes in the flat areas vegetative screening increases.
d. Ability of user to find a secluded spot: seclusion in the many washes and canyons is not difficult.There are also basins, ridgelines, and even mountain tops that provide outstanding opportunities for solitude.
e. Presence of outside sights and sounds: The surrounding agricultural lands provide a unique contrast to the untrammeled character

of the Sawtooth Mountains. It is possible that flight levels in this area are being broken by local pilots, and therefore disrupt opportunities for solitude as well. The Endangered American Wilderness Act of 1978 addressed the issue of "purity" and how congress did not intend for wilderness designation to be completely isolated from the "sights and sounds" of man (H. R. 95-540). In the house report (No. 95-540) referring to the Sandia Mountain Wilderness in New Mexico as quoted in the BLM handbook H-6310-1 states:

> "The "Sights and sounds" of nearby Albuquerque, formerly considered a bar to wilderness designation by the Forest Service, should, on the contrary, heighten the public's awareness and appreciation of the area's outstanding wilderness values."

This standard applies in the case of the Sawtooth Mountains with the existence of the completely trammeled agricultural lands to the east of the unit. The agricultural imprints make it seem as if there is a sea of development with an island of wilderness. This area's population is expanding and state and private lands are being retired from agricultural uses and being sold for residential development. The Wilderness Act of 1964 was created " In order to ensure that an increasing population, accompanied by an expanding settlement and growing mechanization, does not occupy and modify all areas within the United States and its possessions, leaving no lands designated for preservation and protection in their natural condition…" P.L. 88-577; 16 U.S.C. § 1131 section 2 (a).

Primitive and Unconfined Recreation: The Sawtooth Mountains allow a variety of primitive and unconfined recreational activities. The Sawtooths offer various levels of hiking, from flat walking in the bajadas, to rock scrambling on the nearby peaks and ridges. Climbing possibilities do exist, to what extent is

unknown. Backpacking, hunting, horseback riding, photography, bird watching, and sightseeing for botanical, zoological, and especially geological features are all possible primitive and unconfined recreational opportunities within the Sawtooth Mountains. Overnight camping within the area's small basins and valleys isolates one from most of the light pollution of the surrounding cities of Casa Grande and Marana, and allows outstanding opportunities for star gazing while the bats swoop above catching and eating the various insects.

Supplemental Values: Various supplemental values as described in section 2(c) of The Wilderness Act exist in the Sawtooth Mountains.

Special Status Species within Sawtooth Mountains

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The Arizona Wilderness Coalition believes that wilderness preservation is not only important for human needs, but for the conservation of species as well. The following section represents detailed information about the supplemental wilderness values of Special Status species in the proposed Sawtooth Mountains Wilderness Study Area Unit. All species described here are at risk and would be more adequately protected with wilderness designation.

Gopherus agassizii

Common name: Sonoran desert tortoise
Class: Reptilia
Order: Chelonia
Suborder: Cryptodira
Genus: Gopherus
Species: agassizii

Status: A candidate for listing as a threatened species

Identification: The Sonoran desert tortoise has inhabited earth for 67 million years. It is a flat, pear shaped herbivore that is able to live in extreme heat where the ground temperatures can exceed 140 degrees F. It can do so by digging underground burrows to escape the high temperatures. The tortoise can spend 95% of its life in these burrows where it is also protected from freezing while it is in its dormant period (November- March). Both sexes of the tortoises have an anterior extension on the lower shell. In males the horn is often larger and upturned. Males use these to flip other males onto the back when fighting other males. The hind feet differ greatly from the front feet in both sexes. The hind feet are elephantine and the front feet are flattened and muscular. The females use their front feet to dig nests. It can weight 8-15 pounds

A curious behavior pattern found in this species is they dig catchment basins in the soil to catch water when it rains. Also, they seem to remember where their basins are and are found waiting next to them when rain looks imminent.

Habitat: In the Sonoran Desert of Arizona tortoises live on steep, rocky hillsides in Palo verde and Saguaro cactus communities.

Range: The Sonoran population is defined as all individuals south and east of the Colorado River.

Diet: The main diet consists of herbs, grasses, some shrubs, new cacti growth and cacti flowers, and dry forage as well as annual germination.

Reproduction: Courting and copulation occur mostly when tortoises are above ground in late summer or early fall. Eggs are laid in May, June, and July. Nests are dug near the front of the burrow. No more than 1 hatchling from

every 15 to 20 nests will reach sexually maturity. The number of eggs is between 4-8. Sexually maturity may take 12 to 20 years. These factors lead to a low population turnover. Mating Season is from Aug.-Oct, incubation Period is 90-120 days, and the typical lifespan is 80-100 yrs. The birth interval is 2-3 years.

Threats:

- Illegal collection by humans for pets (poaching)
- Forage plant loss caused by overgrazing of cattle and the introduction of invasive species
- Urban development and mining, which has lead to destruction of habitat
- Increased raven population due to urban expansion
- Upper respiratory disease due to pet tortoises released into the wild
- Off road vehicles crushing burrows and young
- Hikers and mountain bikers

Conservation Recommendations:
Since 1980, the Desert tortoise population has declined 90%. This species is a keystone species in the Sonoran Desert. The species decline is caused from numerous sources both human made as well as natural.

Ravens, Gila monsters, Kit foxes, and other species are natural predators that eat eggs and juveniles. Remote populations appear to be in stable condition however; populations are declining in populated urban areas and recreational areas. Development is infringing on these remote areas making the need to protect these species great and extremely necessary. With increasing developments raven populations are increasing as well leading to a decrease of tortoise eggs and young. The status in Arizona is considered by some to be less serious than that of the Mohave desert tortoise but the situation warrants more research and protection due to the fact that Arizona is the second largest growing state. It is estimated that Pima county is the fastest growing county in Arizona and will soon reach the size and population of Phoenix. The Mohave desert tortoise is listed as endangered and became so due to the exact same threats the Sonoran desert tortoise is facing.

Recommendations:

- Complete closer of area and designation as wilderness.

- Identify, restore and protect existing potential habitat. This will help Sonoran desert tortoise thrive and populations to increase.
- The public needs to be educated about the negative effects of human impacts as well as how they can protect tortoise habitat.
- Restricting human visitation where this species is known to dwell and where potential habitat exists. This should happen especially during the breeding season.
- ORV use needs to be regulated in all areas.
- Existing roads thru habitat and identified potential habitat need to be closed.
- Protect any known habitat of this species and enforce any regulations that exist.

The existence of various archeological sites has been documented during Arizona Wilderness Coalition inventories through the location of pithouses, petroglyphs and pictographs, and pieces of pottery. It is believed that the Sawtooth Mountains were inhabited and used by ancestors of the Tohono O'odham and early prehistoric peoples. There are also indications that this was a stopping point for ancient cultures in migrations or travels to the north and west.

Bighorn sheep in the Sawtooth Mtns.
By: Mike Seidman

Although we are unaware of evidence indicating recent or regular movement of bighorn sheep to the Sawtooth Mountains, bighorn have occurred there in the past and might be considered for a transplant if some roads were closed (Lee et al. 2000) and connections to the Silverbells were protected. Expansion on to the Tohono O'odham reservation is also possible. (The study about to get underway will indicate whether any movement into and out of the Sawtooths is currently occurring). The BLM needs to strongly consider the acquisition of state and private lands that may be impeding their important seasonal movements. Bighorn sheep are fairly rigid in their behaviors, which tend to be learned from previous generations. According to Geist (1971), "If traditional movement patterns are interrupted for a generation, they may be lost to the population". The Sawtooth Mountains are part of a chain of desert mountains-- from the Sonoran

Desert National Monument to the Silverbells, Waterman/Roskruges and Tohono O'Odham lands and even the Baboquivaris-- providing suitable habitat for a meta-population. Saving this small and isolated population in the long run will require colonization and movement among most of these ranges. If the BLM remains uncertain about recommending the Sawtooths for inclusion in the Wilderness network, this fact should tip the scales in favor of it. Other wildlife such as deer, birds of prey, foxes, and desert tortoises occur here. The Sawtooth Mountains provide valuable habitat for these species with the encroaching development from the eastern agricultural lands.

The proposed Sawtooth Mountains Wilderness Study Area of Ironwood National Monument, if designated as wilderness, would protect a significant portion of Sonoran desert and species diversity. Immediate action will increase the chance of survival of the above species as well as numerous others. Protection and management recommendations are: Establish a large area of protected wilderness as defined by the Wilderness Act that allows for safe movement between all sections, prohibit any ORV use and mining in this wilderness area, restore and rehabilitate damaged areas, and educate the local community about how they can help in the process of monitoring and maintaining a healthy wilderness area.

Conflicting Resource Issues:

1. Minerals- The Ironwood Forest Preplan Analysis outlines very clearly the state of minerals in the monument in the following text:

"Creation of the IFNM withdrew all public lands and Interest in lands from entry, location, and leasing under the mineral leasing and mining laws. As of June 9, 2000, mining claims cannot be located within the IFNM and mining leases cannot be issued. Claims and leases that existed prior to the date of creation of the IFNM have valid existing rights. In order to establish valid existing rights for a mining claim, a validity examination must be conducted to determine if the claim supported a discovery of a valuable mineral deposit prior to the date of the Proclamation. Currently, there are 387 active mining claims within the IFNM, held by seven individuals or groups. Sixty-six percent of the claims are held by one company, with three other companies or individuals at 13%, 10%, and 9%respectively. There are no active mineral leases."

There are no active mining claims within the proposed Sawtooth Mountains Wilderness Study Area (USDI 2001).

2. Off Road Vehicle use- Many of the existing wildcat routes have been created by irresponsible Off Road Vehicle users. Destruction of vegetative, geological, and archeological objects of the Ironwood Forest National Monument occurs mostly around highly impacted Off Road Vehicle routes (see photos: IFNM-1-47 thru51; IFNM-1-67 thru 73). The occurrence of alcoholic beverage containers, discharged ammunition, and torn up vegetation from Off Road Vehicle use occurs in the same areas, which leads to the conclusion that all of these uses are occurring together. Such actions are not appropriate anywhere. The Sawtooth Mountains do not receive heavy Undocumented Immigrant traffic, which makes Off Road Vehicle use the number one impact to monument objects. The evidence is so clear that it would not take a study to determine that the problem is the proliferation of illegal wildcat routes used for the sole purpose of recreational Off Road Vehicles. These uses are incompatable with the preservation and protection of the objects of the monument and therefore do not pose a valid resource conflict other than that they are rapidly destroying the objects of the monument and the wilderness character of the Sawtooth Mountains.

Historical Review, The Arizona BLM Wilderness Inventory (1978-82)

The BLM's initial wilderness inventories were completed under the requirements of section 603 of the Federal Lands Policy and Management Act (FLPMA) of 1976. The BLM started an initial inventory of all public lands under their management in Arizona and sorted out all lands that "clearly and obviously" lacked wilderness characteristics. Through this process the Sawtooth Mountains (unit # 2-190) were chosen as an initial inventory area. In the Initial Inventory process started in 1978 the BLM reported in their "Wilderness Review, Arizona Initial Inventory of Public Lands Administered by Bureau of Land Management Decision Report September 1979", that conflicting comments where received regarding the unit's naturalness, solitude, and opportunities for primitive and unconfined recreation. The BLM noted that no comments were specific enough and the

Sawtooth Mountains would be intensively inventoried (USDI 1979).
In the "Wilderness Review, Arizona Intensive Inventory of Public Lands Administered by BLM Proposal Report 1980", the BLM recommended the Sawtooth Mountains undergo wilderness study (USDI May 1980). The BLM further explained in this report:

> "Despite the vehicle ways, historic mining activity, and three water catchments, the unit is essentially natural because these imprints are not substantially noticeable." … "The rugged nature of the unit's mountains combined with good vegetative screening provide outstanding opportunities for solitude and a variety of primitive and unconfined types of recreation." (USDI May 1980)

In the BLM's Decision Report produced in November of 1980 the Sawtooth Mountains were dropped from further study (USDI 1980). This decision was inconsistent with the BLM's own findings. In this report the BLM indicated that, "an exceptional number of comments were received", both supporting the BLM's findings of the area's wilderness characteristics and disputing the BLM's findings making the argument that the area was not natural and did not offer solitude or primitive and unconfined recreation due cumulative imprints of man (USDI November 1980). Due to the specificity of comments received the BLM was required to field check the unit. In the BLM's field check the agency determined that portions of the unit were not natural in Township 9 south Range 6 east section 16, NE ¼ SW ¼ and section 15 SW ¼ SW ¼. Due to these impacts the BLM removed 800 acres around this area, out of a total 11,900 acres. A road was also found to exist within this area for 1.4 miles, and .2 miles into the inventory unit. This road accessed a prospect pit, and was cherrystemed into the unit (USDI November 1980). After the reassessment of this area the BLM continued to support its original inventory findings with the following statement:

> "The accumulation of imprints elsewhere in the unit, though noticeable at times, is not significant enough to adversely affect the apparent naturalness of the remainder of the unit." (USDI November 1980)

The BLM also found in its field checks that a route to a water catchment in township 9 south range 6 east, section 26 was in fact a road. The BLM made a minor boundary modification to exclude this road. The final rationale for dropping this unit was as follows:

> "While portions of the unit remain in an essentially natural condition, the cumulative and confining effects of the unnatural areas and scattered imprints limit opportunities for both solitude and primitive recreation. While there are some opportunities to avoid the sights and sounds of man, the unit lacks the extensive interior where man' works can truly be avoided. Opportunities for primitive recreation, including hiking, rock climbing, and photography are good, but not exceptional. This coupled with the confining aspect of the unit's limited and isolated natural areas make opportunities for primitive recreation less than outstanding." (USDI November 1980)

The Arizona Wilderness Coalition has reviewed the historical material for the Sawtooth Mountains wilderness inventories and finds that the BLM's reasons for dropping this unit are severely flawed and inconsistent with the BLM's own recommendations. The following information is part of the "New Information" criterion as explained in the BLM H-6310-1 handbook section .06 (E)(b).Following is a detailed explanation of why past inventories are flawed.

1.) In the BLM's inventory there was never any mention of supplemental wilderness values as explained in section 2 (c) of The Wilderness Act of 1964, " may also contain ecological, geological, or other features of scientific, educational, scenic or historical value." Furthermore, the BLM Handbook H-6310-1 in section .2 (C) Other Resource Values and Uses , explains that the BLM must document how WSA designation would affect resource values other than recreation.The handbook goes on to explain how legislative history of The House Report (HR 94-1163) from the Interior and Insular Affairs Committee on FLMPA explains that other resource values such as watershed and water yield, wildlife habitat preservation, preserving natural plant communities and similar natural values should be considered as to how they augment the multiple use management of adjacent or nearby lands (USDI 2001). Even with adjustment of the unit's boundary for a water catchment for wildlife there was never any analysis of the benefits of wilderness for wildlife habitat in the BLM's original inventories.

2.) The BLM's decision to drop the Sawtooth Mountains from further study referred to cumulative and confining impacts of the unnatural areas and scattered imprints that limited the opportunities for both solitude and unconfined recreation (USDI November 1980). After the BLM conducted their final field check of this area they excluded a total .4 miles of road through cherrysteming and 800 acres in the northwest corner of the unit to remove the unnatural areas.

3.) These exclusions left approximately 11,100 acres that contained wilderness characteristics, twice the minimum size limit for wilderness.

4.) There is no reference made to any wilderness precluding characteristics within the unit after the 800 acre exlusion. Yet it seems as if the Sawtooth Mountains were dropped from further study based upon lands that were no longer inside the inventory unit. Despite BLM's statement that human impacts outside the inventory will not "normally" be considered in assessing naturalness of an area, although the agency may evaluate such impacts for their "direct affects on the inventory area" (USDI 2001 [H-6310-1, Section .13(B)(2)(c)]). The Wilderness Act, and subsequent legislation such as the Eastern Areas Wilderness Act, generally prohibit outside "sights and sounds" from precluding wilderness designation (Scott 2001).

5.) Not only did the BLM evaluate the natural character of the unit based on impacts outside the inventory unit, but it gave no explanation as to how these impacts would affect the ability of a visitor to experience unconfined and primitive recreation. The BLM refers to "primitive and unconfined recreation" as "…those activities that provide dispersed, undeveloped recreation which do not require facilities or motorized equipment." In no way do unnatural areas outside the inventory unit

affect the visitor's ability to participate in primitive and unconfined types of recreation.

6.) The BLM H-6310-1 handbook explains the direction given by The Wilderness Act in reference to "…outstanding opportunities for solitude or primitive and unconfined type of recreation." The word "or" in this sentence means that a proposed wilderness does not have to possess outstanding opportunities for both solitude and primitive recreation; it only has to possess one or the other. (USDI 2001 [H-6310-1, Section .22(A)(1)(b), page 21])." This clarification further supports that the Sawtooth Mountains did qualify as having wilderness characteristics because they possessed opportunities for primitive and unconfined recreation, even if the unnatural areas outside the inventory unit affected the ability of visitors to find solitude.

7.) 800 acres of unnatural terrain in the Northwest corner of a chain of rugged volcanic mountains totaling 11,100 acres in no way prevents a visitor from finding outstanding opportunities for solitude anywhere inside the unit. BLM's handbook gives direction on evaluating solitude by explaining that consideration should be given to factors which influence a person's opportunity to avoid the sights, sounds, and evidence of other people within the inventory unit, and not—opportunities for solitude in comparison to human habitation(USDI 2001 [H-6310-1, Section 13(B)(3)(c)(1)(a), page 14]). The BLM states that "[t]he fact that non-wilderness activities or uses can be seen or heard from areas within the inventory area shall not be considered when analyzing an area's manageability as a WSA" (USDI 2001 [H-6310-1, Section .2(B)(4), page 24]). The agency instructs its staff to:

a. Avoid using lack of terrain variation or vegetation, or size as disqualifying conditions for outstanding opportunities for solitude (USDI 2001 [H-6310-1, Section .13(B)(3)(c)(2)]). Do not assume that simply because an area or portion of an area is flat and/or unvegetated, it

automatically lacks an outstanding opportunity for solitude (USDI 2001 [H-6310-1, Section 13(B)(3)(c)(1)(b), page 14]). Similarly, do not conclude that simply because an area is relatively small, it does not have an outstanding opportunity for solitude. Consideration must be given to the interrelationship between size, screening, configuration, and other factors that influence solitude (USDI 2001 [H-6310-1, Section .13(B)(3)(c)(1)(b), page 14]), and

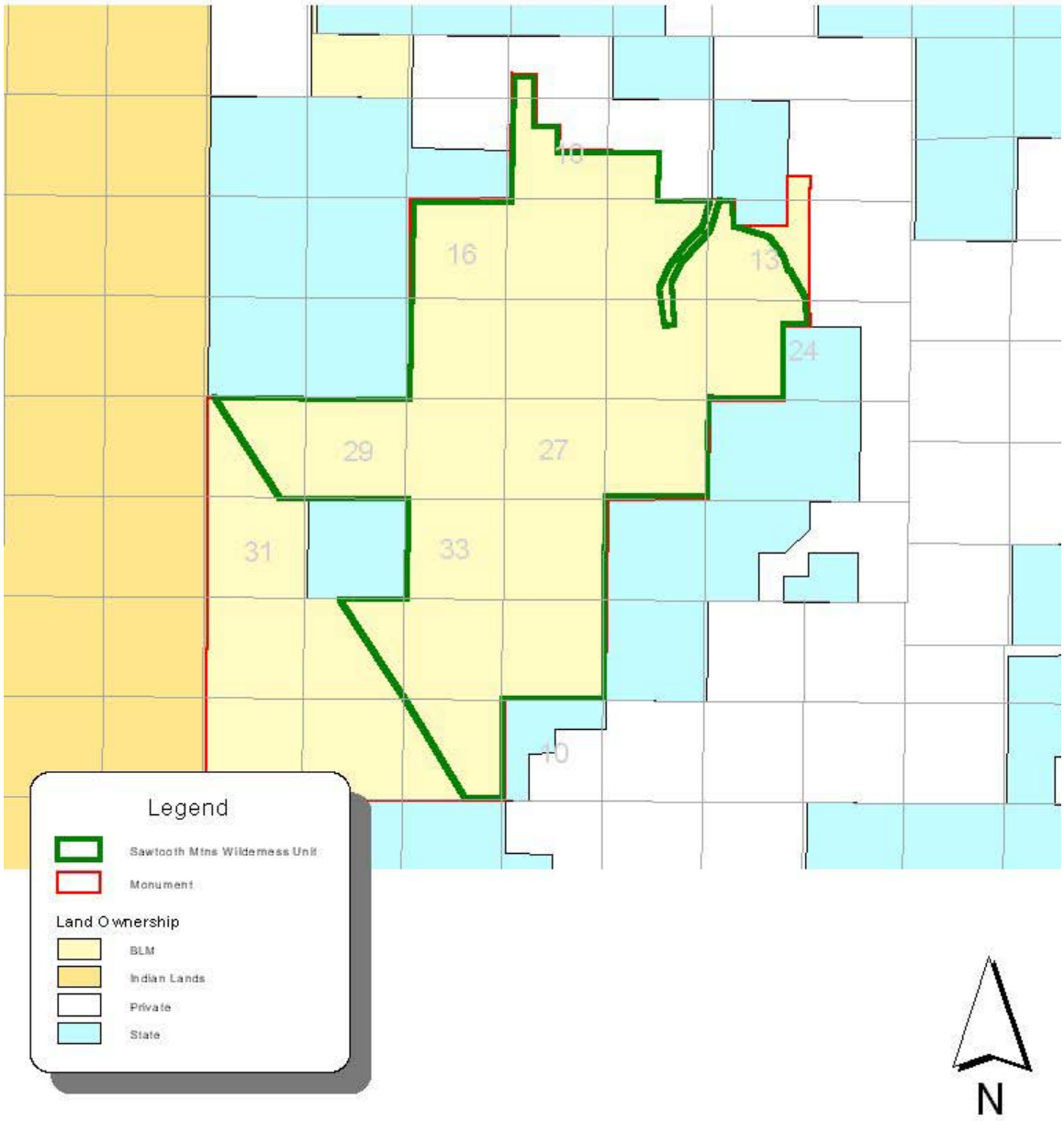
8.) Consider factors or elements influencing solitude including size, natural screening, and the ability of the user to find a secluded spot (USDI 2001 [H-6310-1, Section .13(B)(3)(c)(1)(c)], page 15).

The historical review of the initial and intensive inventory processes for the Sawtooth Mountains clearly shows that the BLM must reconsider Wilderness Study Area designation for this unit. This review provides a piece of the,"New Information" criterion as explained in the BLM H-6310-1 handbook section .06 (E)(b). The BLM must consider many aspects of new information, including but not limited to: monument designation, population expansion, Threatened and Endangered species, and changing recreational uses. In conclusion, the BLM must reconsider wilderness for the Sawtooth Mountains to evaluate the flaws that occurred in past inventories, as well as for the purposes of protecting valuable wildlands.

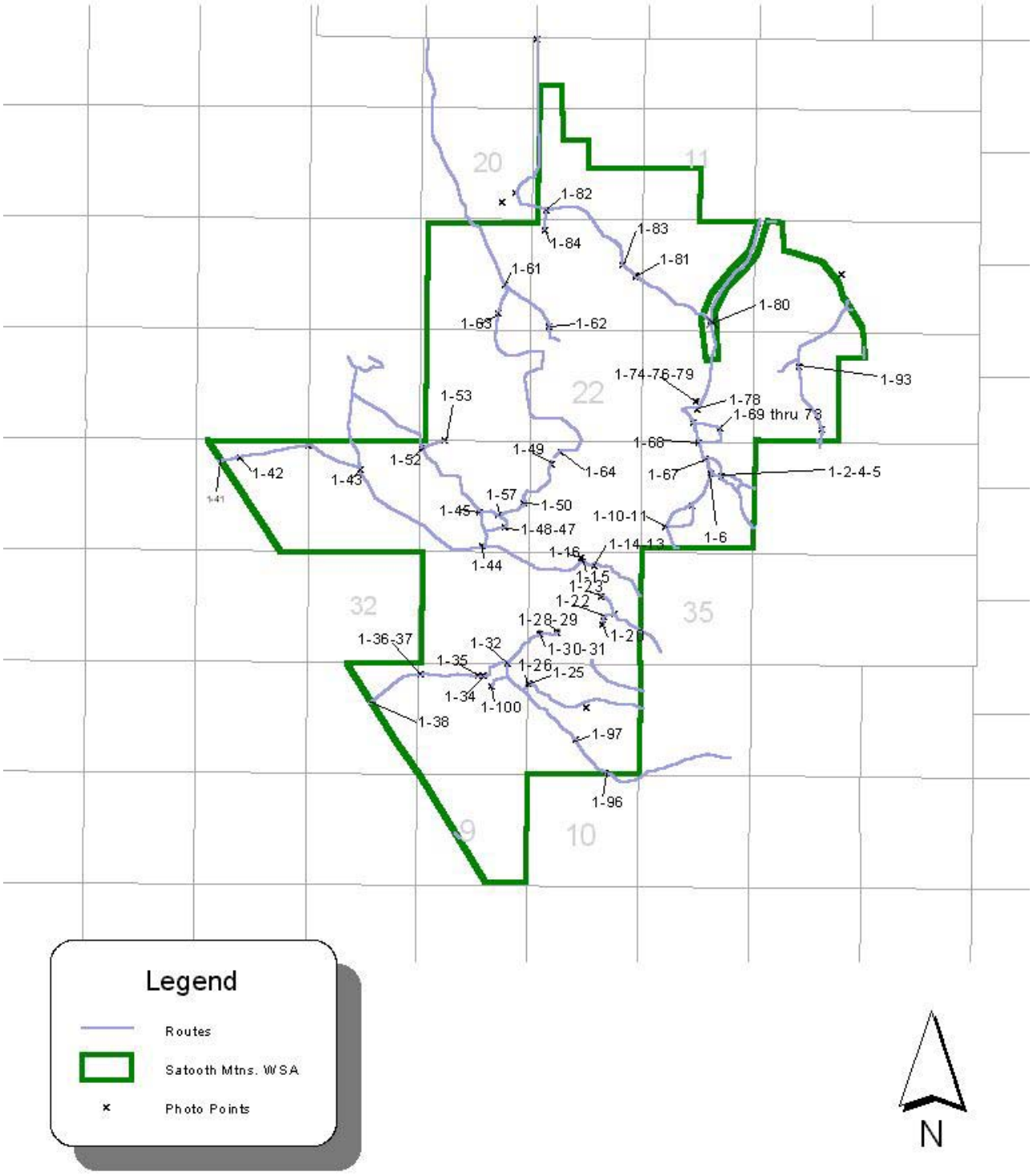
Conclusion

The Sawtooth Mountains meet all the requirements for Wilderness Study Area designation. The documentation provided here and in the general justifications section of this report supply the required "new and supplemental information" to make this proposal a valid reccomendation in the planning process. The results of non-designation have already been seen in this area with the proliferation of new wildcat routes created by uncontrolled Off Road Vehicle users. With the encroaching development and growing population the wilderness characteristics and monument objects of Sawtooth Mountains will continue to be degraded. The best management decision for this isolated mountain range is wilderness protection.

Sawtooth Mtns. Wilderness Study Area Proposal



Sawtooth Mtns Photo Points



1-1 erosion after wash

1-2 Junction IF-5 User created route, vegetation destruction

1-4 Vegetation damage passing through wash

1-5 Junction A

1-6 Large campsite with numerous ORV impacts to vegetation

1-10 Junction D at guzzler

1-11 guzzler

1-13 prospect pit

1-14 prospect pit

1-15 worst erosion on segment over 15 Degree slope

1-15a road splits around Palo Verde severe erosion

1-16 old campsite in saddle

1-20 interesting geology supplemental values

1-23 end segment E no apparent reason for route.

1-25 end of segment IF-12 ORV route continues

1-22 Beginning segment F to saddle, no apparent reason for route

1-26 ORV route through wash

1-29 trash along segment IF-13

1-31

1-34 destruction of monument objects, arrow through Saguaro

1-28 campsite with pallet

1-30

1-32 Junction G

1-35 Naturalness-grasses/cholla/palo verde

1-36 average conditions on G

1-41 Junction I on Power line road

1-43 Junction J

1-38 Junction H at power line

1-42 average conditions on I

1-45 junction L

1-47 petroglyph on rock next to ORV tracks

1-48 ORV tracks potentially on archeological site

1-49 user created ORV trail through drainage, connects with old route at picture 1-64

1-51 user created ORV trail

1-52 Junction O

1-53 end segment O no apparent reason for route

1-61 Junction T

1-62 guzzler

1-63 Junction U segment to the right vanishes after 1/8 of a mile

1-64 average conditions between Junctions U and N

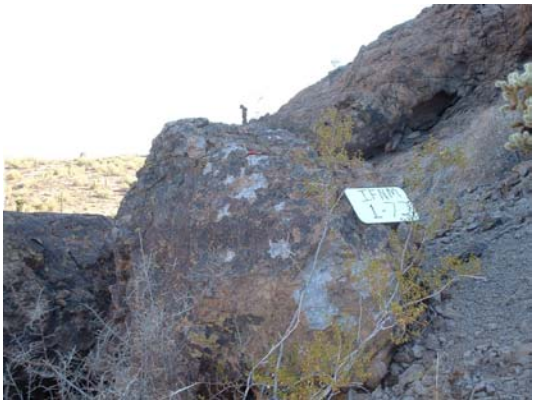
1-67 short route ends less than 100 yards

1-67 Junction X

1-69 ORV tracks leading out of wash

1-70 ORV track leading back to Junction X

1-71 Beer cans and vegetation damage in saddle potential archeological site



1-72 shooting scars on rock

1-73 ORV tracks leading out of wash severe erosion and destruction of vegetation

1-74 vehicle destruction of vegetation Off Road travel

1-76 more Off road travel and destruction of vegetation, erosion

1-78 Junc Y

1-79 end Y washed out

1-83 Average Conditions on segment Z

1-84 end AB

1-80 Junction Z

1-82 Junction AB

1-96 Junction QR

1-97 Painted Arrow

1-100 End Segment ST

Ragged Top

Unit Description:

This area is located next to the Silver Bell Mountains, 33 miles northwest of Tucson and 20 miles south of Picacho Peak inside the Ironwood Forest National Monument. Ragged Top mountain is flanked by the crescent, seven mile long Silver Bell Mountain Range. The 3,907-foot Ragged Top abruptly rises 1,600 feet from the desert floor; its spires and crags pierce the skyline and stand in marked contrast to the smooth silhouette of the nearby Silver Bell Mountain Range. Accumulations of fallen rocks and sand fan out from the bases and support an impressive forest of green ironwood, foothill palo verde, and mesquite trees. Saguaro cacti are abundant here, as are dozens of other species of cactus and vegetation. Water sources in the arroyos are unpredictable, but shy desert animals abound in this area (AWC 1987).

Wilderness Characteristics:

Size: 6,161 acres

Naturalness: The natural geological and biological features of the Ragged Top Unit substantially enhance its supplemental wilderness values. The unique geologic origin of Ragged Top and the smaller Wolcott Peak in comparison with the surrounding mountains cause them to stand out from over 10 miles away. The topographic variation of Ragged Top allows for both upper and lower Sonoran Desert vegetative zones to exist. The northern bajadas and the basins and arroyos between ragged Top and the Silver Bells are much wetter than other areas, and contain dense vegetation with large stands of Saguaros (AWC 1987). Numerous other types of vegetation such as, Ironwood and Palo verde trees, Chain fruit and Teddy bear cholla along with Prickly pear cacti can be found throughout the Unit. In some of the hotter places huge Barrel cacti that grow over four feet can be found. Ragged Top also has unique remnant plants from the montane and chaparral life zones left over from 11,000 years ago. These plants include Arizona rosewood, shrub live oak, and potentially Thornber's yucca (Weins 1989). This vegetative variation is a result of the variation in elevations and slope aspect that can be found in the Unit.

Wildlife is abundant in this lush desert environment. The crags and spires, bajadas, and sandy washes of this Unit provide for a variety of wildlife habitats. Unique species include the Sonoran Desert tortoise, Gila monster, and Desert bighorn sheep. Bird watching is highly rewarding with over two dozen species, including Golden eagle, Prairie falcon, Elf owl, Horned owl, Cactus ferruginous pygmy owl, and Zone-tailed hawk. The above wilderness qualities exceed any expectations that one could have for supplemental values as explained in section 2 (c)(4) of the Wilderness Act of 1964. These values and the other wilderness characteristics that this unit meets, makes it a perfect place to protect as wilderness.

Guzzlers There is one Arizona Game and Fish water catchment/guzzler in the Ragged Top Unit. The BLM Handbook H-8550-1 Interim Management Policy for Lands

Under Wilderness Review gives further direction in regards to water catchments/guzzlers in chapter 3, section G. (4), "Certain permanent installations may be permitted to maintain or improve conditions for wildlife (USDI 1995)." Also in Chapter 3 section G. (4)(a) The handbook directs that "Guzzlers may be maintained…" This direction given to the BLM does not make the existence of water catchments a factor in determining naturalness if they enhance the wilderness characteristics of the area by maintaining native wildlife populations (USDI 1995). Furthermore, in appendix D. of handbook H-8550-1 the BLM interprets the "…minimum requirements for the administration of the area…" as stated in The Wilderness Act of 1964 section 4(C). In this appendix direction is given on how range and big game wildlife developments are to be managed under the "Minimum Data Requirements" and the "Maximum Acceptable Impacts" standards (USDI 1995). These standards and the studies to determine how water catchments/guzzlers enhance native wildlife populations would be applied to all existing wildlife waters with designation of Ragged Top Mountain as a Wilderness Study Area (WSA).

Outstanding Opportunities for Solitude or Primitive and Unconfined Recreation:

The Ragged Top proposed wilderness Unit possesses both opportunities for solitude and primitive and unconfined recreation. The opportunities for both exist within all or most of the Unit. The BLM's Wilderness Inventory and Study Procedures Handbook H-6310-1.22, section (b)(1) gives direction on the assessment of solitude in inventory Units. In this section five features for evaluating solitude are given. The following is a list of how the Ragged Top Unit meets each of these criteria.

f. Size and configuration: The Unit meets the 5,000-acre size criteria, and it is not long and narrow or have irregular extensions or cherry stems. It is easily managed on three of four sides as roads bound it. The southwest side is the monument boundary with the Asarco/Silver Bell copper mine, and could be managed with cooperation from Asarco.

g. Topographic screening: There are many canyons, ridges, mountainsides, and tops where the topography provides outstanding isolation and solitude from other visitors.

h. Vegetative screening: In the bajadas just below the rugged mountain the vegetative screening is exceptional with a diversity of vegetation with stands of saguaro, palo verde dominating the bajadas, and Ironwood inside and along washes where vegetative screening increases.

i. Ability of user to find a secluded spot: seclusion in the many washes and canyons is not difficult. The Topography of Ragged Top and its high summit allow for solitude in a different way. One can see the surrounding desert mountains and flats for miles around. Giving a sense of solitude that is often found with views of wide expanses of open land.

j. Presence of outside sites and sounds: The Asarco Copper mine can sometimes be heard and seen from the very top of Ragged Top, and along the Crest of the Silver Bell Mountains. This is an unfortunate reality of all areas adjacent to this large mining operation. Two things make the existence of the mine and wilderness compatible. One is that the mine will eventually run out of copper to mine in the area, and two is the intentions of Congress in regards to outside sights and sounds. The Endangered American Wilderness Act of 1978 addressed the issue of “purity” and how Congress did not intend for wilderness designation to be completely isolated from the “sights and sounds” of man (H. R. 95-540). In the house report (No. 95-540) referring to the Sandia Mountain Wilderness in New Mexico as quoted in the BLM handbook H-6310-1 states:

> “The “Sights and sounds” of nearby Albuquerque, formerly considered a bar to wilderness designation by the Forest Service, should, on the contrary, heighten the public’s awareness and appreciation of the area’s outstanding wilderness values.”

Primitive and Unconfined Recreation: The Ragged Top Unit allows a variety of primitive and unconfined recreational activities. Hiking and climbing Ragged Top are the most popular activities in the Unit, but other activities such as rock hounding, sightseeing, and photography are also of high quality. The wildlife viewing opportunities are outstanding as well as the array of interesting desert plants for botanical studies. Desert tortoise, Gila monster, and Bighorn sheep are some of the species that draw wildlife viewers to this unique rocky jewel in the desert.

Supplemental Values: Various supplemental values as described in section 2(c) of The Wilderness Act exist in the Ragged Top Unit.

The geologic nature of the Ragged Top Unit provides for interesting opportunities for scientific and educational uses, as it is a unique volcanic plug in the surrounding landscape.

Various individuals and the BLM have documented the existence of archeological sites in this area. Petroglyphs and pottery cherds have been found, and at least one cultural resources survey has been conducted (USDI 1989). The Ironwood Forest National Monument was created specifically to protect objects of archeological significance, such as the objects contained inside the Ragged Top Unit.

Special Status Species within the Ragged Top Unit

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The Arizona Wilderness Coalition believes that wilderness preservation is not only important for human needs, but for the conservation of species as well. The following section represents detailed information about the supplemental wilderness values of Special Status species in the proposed Ragged Top Wilderness Study Area Unit. All species described here are at risk and would be more adequately protected with wilderness designation.

Abutilon parishii

Common Name: Pima County Indian Mallow
Family: Malvaceae
Genus: Abutilon
Species: parishii

Status: Highly safeguarded protected native plant in Arizona and a Forest Service sensitive species.

Identification: This is a plant with a woody base and herbaceous branch. It has a long, sparsely leaved stem. The top of the leave is velvety with the reverse side having a much paler green color. The flowers are light orange with five petals and bloom from March-October.

Habitat: This plant is usually found at cliff bases, rocky hillsides, lower slopes, and ledges among rocks and boulders. Plants are often found near trails.

Range: In 1991 270 plants were located in Arizona, 199 of these were found in the Santa Catalina Mountains. In 1994 new plants were discovered in mountain ranges in south-central Arizona and central Sonora at elevations between 1,000-4,000 feet.

Threats:

- Potential mining and related activities
- Off trail hikers and campers
- ORV use
- Introduction of invasive plants used for grazing.

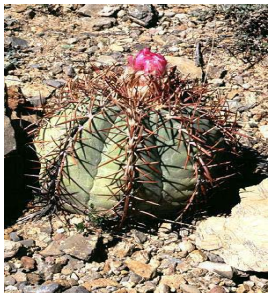
Conservation Recommendations:

- The potential mining and related activities cause erosion and trampling on hillsides. This destroys habitat for this species. Any existing mines should be

following regulations that are placed upon them and all inactive mines should remain closed.

- If the mines are inactive, restoration should be the primary focus. Closing all access roads to these abandoned sites will limit visitation.
- Off trail hikers and campers can trample this species. Any trails that are near these plants should be diverted however; caution should be used during any trail maintenance to minimize trampling any other sensitive species or the Pima County Indian Mallow.
- Livestock grazing is not an issue considering the rocky, steep habitat. The issue associated with grazing is the introduction of plants used for grazing.
- Removal of the Bufflegrass and Thornberry, two invasive species, is necessary to ensure survival of the Pima Indian Mallow.
- ORV use should be regulated and regulations should be enforced.
- In the areas where this species exist markers should be placed so humans can see where not to walk.
- All recreational users and general public should be educated to increase awareness.
- The primary suggestion is to designate and manage this area as wilderness.

Echinocactus horizonthalalonius var. nicholii



Common name*: Nichol Turk's Head Cactus*
Family: Cactaceac
Genus: Echinocactus
Species: horizonthalonius

Status: This species was listed as endangered in 1979. It is also protected from international trade. These plants are in danger of extinction due to the decrease of available growing sites and their population dynamics.

Identification: This cactus grows only in Arizona upland division of the Sonoran shrub biome. It is a barrel cactus that ranges from blue-green to yellow-green in color. It has eight ribs that spiral on the trunk and it reaches a maximum height of 18″ with a diameter of 8″. The flowers are bright purple or pink and bloom in April to May. Each areole has three red central spines and five thin radial spines surrounding the central three. This species has a very slow growing rate and can take up to ten years to reach two inches. Population dynamics are slow and the turnover rate is low. It may have a lifespan of 75-100 years.

Habitat: This species occurs in semi-arid Sonoran desert shrub in limestone outcroppings and limestone derived soils. It tends to grow on terraces and elevations from 2,400 to 4,100 feet. Some plants are found growing on alluvial fans. These alluvial fans are poor habitat for trees and shrubs therefore it is an open, sunny habitat for these cacti.

Range: This species is restricted to the Vekol and Waterman Mountains in Pima County Arizona, and to the Sierra del Viejo of Northwestern Sonora, Mexico.

Diet: Not Applicable

Reproduction: Not Applicable

Threats in Pima County:

- Copper mining
- Urban development
- Highway construction
- Hikers and campers straying from trail
- Off-road vehicle use have been detrimental to populations of this species
- Other serious threats include limestone quarrying, collecting, invasive species, and erosion.

Conservation Recommendations:

- Primary recommendation is a complete closure of this area and wilderness designation.
- This is a rare species with 90% of this species historic range being in Pima County. All known populations and suitable habitat should be protected and conserved.
- All active mines should relocate any species to safe optimal habitat.
- All inactive mines should remain closed.
- All natural populations need to be maintained, protected, and restored.
- Invasive species control needs to happen.
- All Nichol Turk's Head that are found on private lands under development should be removed to suitable, protected habitat.
- The general public should be educated to increase their awareness of their impact and the imminent danger facing this species.
- Lastly, because this species is listed as endangered by the Endangered Species Act this species and it's habitat is legally protected.

Gopherus agassizii

Common name: Sonoran desert tortoise
Class: Reptilia
Order: Chelonia
Suborder: Cryptodira
Genus: Gopherus
Species: agassizii

Status: A candidate for listing as a threatened species

Identification: The Sonoran desert tortoise has inhabited earth for 67 million years. It is a flat, pear shaped herbivore that is able to live in extreme heat where the ground temperatures can exceed 140 degrees F. It can do so by digging underground burrows to escape the high temperatures. The tortoise can spend 95% of its life in these burrows where it is also protected from freezing while it is in its dormant period (November- March). Both sexes of the tortoises have an anterior extension on the lower shell. In males the horn is often larger and upturned. Males use these to flip other males onto the back when fighting other males. The hind feet differ greatly from the front feet in both sexes. The hind feet are elephantine and the front feet are flattened and muscular. The females use their front feet to dig nests.

A curious behavior pattern found in this species is they dig catchment basins in the soil to catch water when it rains. Also, they seem to remember where their basins are and are found waiting next to them when rain looks imminent.

Habitat: In the Sonoran Desert of Arizona tortoises live on steep, rocky hillsides in Palo verde and Saguaro cactus communities.

Range: The Sonoran population is defined as all individuals south and east of the Colorado River.

Diet: The main diet consists of herbs, grasses, some shrubs, new cacti growth and cacti flowers, and dry forage as well as annual germination.

Reproduction: Courting and copulation occur mostly when tortoises are above ground in late summer or early fall. Eggs are laid in May, June, and July. Nests are dug near the front of the burrow. No more than 1 hatchling from every 15 to 20 nests will reach sexually maturity. Sexually maturity may take 12 to 20 years. These two factors lead to a low population turnover. The number of eggs is between 4-8. Sexually maturity may take 12 to 20 years. These factors lead to a low population turnover. Mating Season is from Aug.-Oct, incubation Period is 90-120 days, and the typical lifespan is 80-100 yrs. The birth interval is 2-3 years.

Threats:

- Illegal collection by humans for pets (poaching)

- Forage plant loss caused by overgrazing of cattle and the introduction of invasive species
- Urban development and mining, which has lead to destruction of habitat
- Increased raven population due to urban expansion
- Upper respiratory disease due to pet tortoises released into the wild
- Off road vehicles crushing burrows and young
- Hikers and mountain bikers

Conservation Recommendations:
Since 1980, the Desert tortoise population has declined 90%. This species is a keystone species in the Sonoran Desert. The species decline is caused from numerous sources both human made as well as natural. Ravens, Gila monsters, Kit foxes, and other species are natural predators that eat eggs and juveniles. Remote populations appear to be in stable condition however populations are declining in populated urban areas and recreational areas. Development is infringing on these remote areas making the need to protect these species great and extremely necessary. With increasing developments raven populations are increasing as well leading to a decrease of tortoise eggs and young. The status in Arizona is considered by some to be less serious than that of the Mohave desert tortoise but the situation warrants more research and protection due to the fact that Arizona is the second largest growing state. It is estimated that Pima county is the fastest growing county in Arizona and will soon reach the size and population of Phoenix. The Mohave desert tortoise is listed as endangered and became so due to the exact same threats the Sonoran desert tortoise is facing.

Recommendations:
- Complete closer of area and designation as wilderness.
- Restore and protect existing potential habitat as well as existing habitat. This will help Sonoran desert tortoise thrive and populations to increase.
- The public needs to be educated about the negative effects of human impacts as well as how they can protect tortoise habitat.
- Restricting human visitation where this species is known to dwell and where potential habitat exists.

This should happen especially during the breeding season.

- ORV use needs to be regulated in all areas.
- Close existing roads through identified and/or potential habitat.

Macrotus californicus

Common name: California leaf-nosed bat
Order: Chiroptera
Genus: Macrutus
Species: californicus

Status: Listed as federal species of concern, an Arizona Game and Fish species of special concern, and is ranked by the Western Bat Working Group as red/high (species that is imperiled).

Identification: This species has brown coloration with ears that are 1.0 to 1.5 " long and are joined near the base. They have short tails and an erect, lanceloate nose-leaf. The wing span if this bat is 13.5". It is the only bat in the United States with large ears and a nose leaf. It is an extremely maneuverable bat with short wings that help it fly at low speeds with minimal energy use. This insectivore with keen eyesight captures its prey from the ground or foliage rather than in flight. This species does not migrate or hibernate.

Habitat: The California leaf-nosed bat lives in caves, mines, and rock shelters, mostly in Sonoran desert shrub. Roosts sites are usually found close to their foraging areas.

Range: This species ranges from southern California, southern Nevada across the southwestern half of Arizona and southward to the tip of Baja California. In Arizona this species occurs in Sonoran desert Shrub from south of the Mogollon Plateau. It requires 310 acres for a home range.

- Distribution in Arizona: This species occurs in Pima County, Arizona in the Coronado National Forest, Organ Pipe National Monument, Cabeza Preite National Wildlife Refuge, Tucson Mountain Park, and Colossal Cave. In Pima County it has been found in abandoned mines in the mountains.

Diet: This species feeds on grasshoppers, moths, and flying beetles as well as foraging on vegetation.

Reproduction: Male bats set up leks in mines and caves. Females then enter the leks to select a male. When females then set up maternity roosts in another area. The females give birth in May or June. The young are nursed for a month in the maternity roost and then must forage on their own.
Threats:

- The most significant potential threat to this species is the disturbance of roosts by humans.
- The loss of foraging habitat and roost destruction due to mine closures and reactivating mines.
- Low survival rate of immature due to human disturbance.

Conservation Recommendations:

- All mines and caves with known roosting areas need full protection and should be off-limits to humans. Any disturbance to roosts can cause the bats to become disoriented contributing to unsuccessful reproduction.
- When necessary, bat friendly gates should be installed.
- Signs at all off these sites should be posted educating recreational users about what they are and why they should not enter.
- If possible, all trails should be rerouted to decrease disturbance.
- Sonoran desert shrub habitat should be protected has this is their primary habitat.
- Seasonal closure during mating season and young rearing season.
- Roosts should be considered significant and protected.

Myotis velifer

Common name: Cave myotis
Order: Chiroptera
Family: vespertilionioae
Genus: Myotis
Species: Velifer

Status: This species is not state or federally protected however; there are gaps in the knowledge regarding their roosting and foraging requirements and population trends.

Identification: This is the largest of the myotis and can be distinguished by a bare patch on it's back and the absence of a keel on calcar.

Habitat in Arizona: This species is found primarily at low elevations of the Sonoran Desert and transition life zones of the southwest. It is usually in areas dominated by Creosote bush, Palo verde, Brittlebush, and cactus. There is evidence that at least some populations are migratory.

Range: This species occurs from Kansas, Oklahoma and central Texas, to southern Nevada, and southeastern California (along the Colorado River only), south through Mexico to Honduras. At least some populations are migratory and hibernate.

Diet: This bat forages over dense riparian vegetation and in dry desert washes. Studies have shown that lepidopterons and coleopterans (insects) are typical diet.

Reproduction: Females give birth to one young per year in late April and May. Nursery colonies, often found in caves,

can contain up to 15,000 young but it is more common to see colonies with less, usually 1,500. Roosts are primarily found in caves but are often found in inactive and active mines. They dwell in crevices but will also roost in human made structures such as buildings and bridges.

Threats:

- Roost destruction due to mine closures
- Roost disturbances by recreational cavers and hikers
- Loss of foraging habitat in riparian areas due to off road vehicles and developments are also primary threats.

Conservation Recommendations:

- To fully protect this species and their existing habitat the area should be fully protected. Designating and protecting this area as wilderness would protect this species.
- Mines where this species live need to be determined and area needs to be protected.
- Install bat friendly gates at the entrance of mines that are inactive. However, if cave myotis is sharing the same cave as the Mexican free-tailed bats, gates should not be used. The gates have not been tolerated by this species. If they are not found in the caves the gates will allow bats to move freely in and out of their roosting habitat.
- These areas should be strictly off limits to humans. This needs to be strongly considered especially due to the fact that nursery roosts are very sensitive. Any disturbance to these roosts can cause the young to be abandoned and die.
- ORVs, urban development, and hikers cause degradation to riparian areas, their main source of food. ORVs and humans cause the most damage to this species
- Any trails existing in identified habitat or potential habitat need to be rerouted and any roads that ORVs use need to be closed.
- Lastly, public education and awareness about the issues need to occur and any gaps in knowledge need to be filled to fully understand and determine the status of this species.
- Place signs at potential habitat sites.

The proposed Ragged Top Wilderness Study Area of Ironwood National Monument, if designated as wilderness, would protect a significant portion of Sonoran desert and species diversity. Immediate action will increase the chance of survival of the above species as well as numerous others. Protection and management recommendations are: Establish a large area of protected wilderness as defined by the Wilderness Act that allows for safe movement between all sections, prohibit any ORV use and mining in this wilderness area, restore and rehabilitate damaged areas, and educate the local community about how they can help in the process of monitoring and maintaining a healthy wilderness area.

Conflicting Resource Issues:

1. Minerals- The Ironwood Forest Preplan Analysis outlines very clearly the state of minerals in the monument in the following text,

"Creation of the IFNM withdrew all public lands and Interest in lands from entry, location, and leasing under the mineral leasing and mining laws. As of June 9, 2000, mining claims cannot be located within the IFNM and mining leases cannot be issued. Claims and leases that existed prior to the date of creation of the IFNM have valid existing rights. In order to establish valid existing rights for a mining claim, a validity examination must be conducted to determine if the claim supported a discovery of a valuable mineral deposit prior to the date of the Proclamation. Currently, there are 387 mining claims within the IFNM, held by seven individuals or groups. Sixty-six percent of the claims are held by one company, with three other companies or individuals at 13%, 10%, and 9%respectively. There are no active mineral leases." (USDI 2001)

There are no active mining claims within the proposed Ragged Top Wilderness Study Area. About 45 claims exist that will have to under go validity examinations with any plan to develop in the Ironwood Forest National Monument or in a Wilderness Study Area. The existence of the National Monument has the same regulations in regards to mining laws as Wilderness Study Areas.

2. Off Road Vehicle use- irresponsible Off Road Vehicle users have created many of the existing wildcat routes. Destruction of vegetative, geological, and archeological objects of the Ironwood Forest National Monument occurs mostly around highly impacted Off Road Vehicle routes The occurrence of alcoholic beverage

containers, discharged ammunition, and torn up vegetation from Off Road Vehicle use occurs in the same areas, which leads to the conclusion that all of these uses are occurring together. Such actions are not appropriate anywhere.

3. Undocumented Immigrant traffic- The Ragged Top Wilderness Study Area Unit receives heavy Undocumented Immigrant traffic. This traffic normally occurs along routes, washes, and power line corridors. The BLM is not capable of dealing with this issue and needs further assistance to solve this problem. These uses are incompatible with the preservation and protection of the objects of the monument and therefore do not pose a valid resource conflict other than that they are rapidly destroying the objects of the monument and the wilderness character of the Ragged Top Unit.

Historical Review, The Arizona BLM Wilderness Inventory (1978-89)

The BLM's initial wilderness inventories were completed under the requirements of section 603 of the Federal Lands Policy and Management Act (FLPMA) of 1976. During this process the Ragged Top Unit (# 2-197) became a Wilderness Study Area. This means it made it through the Initial and Intensive inventory processes to become a study area. From 1980 thru 1989 the BLM studied the Ragged Top Unit for what affect wilderness designation by Congress would have (USDI 1980). Ragged Top was not designated as wilderness in the Arizona Desert Wilderness Act of 1990.

The BLM started an initial inventory of all public lands under their management in Arizona and sorted out all lands that "clearly and obviously" lacked wilderness characteristics. Through this process the Ragged Top Unit (# 2-197) was chosen as an initial inventory area. In the Initial Inventory process started in 1978, the BLM reported in their "Wilderness Review, Arizona Initial Inventory of Public Lands Administered by Bureau of Land Management Decision Report September 1979", that mixed comments were received on the presence of wilderness values. Specific comments on a road were received, but they did not provide sufficient information to eliminate any part of the area. The BLM decided to Intensively inventory all 7,680 acres (USDI 1979).

In the “Wilderness Review, Arizona Intensive Inventory of Public Lands Administered by BLM Proposal Report 1980”, the BLM recommended the Ragged Top Unit be dropped from further study (USDI May 1980). The BLM further explained in this report:

> Nearly half the Unit is unnatural because of the presence of roads, off-road vehicle, mining site, trails, and a power line. The remaining portion of the Unit remains in a natural condition but is subject to the sights and sounds of the Silver Bell Mine. The natural portion of the Unit is less than 5,000 acres in size (USDI May 1980).

The BLM further explained that these unnatural qualities and the small size of the Unit limited opportunities for solitude. The BLM also explained that the Ragged Top Unit contained outstanding opportunities for primitive and unconfined recreation in the following statement,

> The recreational value of the Unit lies in the wide diversity of opportunities available in such a small area. With its many opportunities the Unit offers outstanding recreational potential. Owing to its small size, however, and the influence of man, these recreation opportunities are not of outstanding wilderness quality. (USDI May 1980)

In the BLM’s Decision Report produced in November of 1980 The Ragged Top Unit was recommended to become a Wilderness Study Area (WSA). Because strong public support was shown through comments received, a 4,460-acre WSA was created and 4,020 acres were dropped from further study (USDI November 1980).

In 1989 the *Arizona Mohave final Wilderness Environmental Impact Statement* recommended the “No Wilderness” Alternative for the Ragged Top WSA. This recommendation returned the 4,460 acres to multiple use management.

The Arizona Wilderness Coalition has reviewed the historical material for the Ragged Top wilderness inventories. This review compared with past and present resource conditions and the Ironwood Forest National Monument proclamation of June 2000 has provided substantial “new information” to reconsider WSA designation for the proposed Ragged Top Unit The following information is part of the “New Information” criterion as explained in the BLM H-6310-1 handbook section .06 (E)(b):

1. The Ironwood Forest National Monument was created to protect specific objects of scientific interest in the monument. The proposed Ragged Top WSA is a specific object named in the first paragraph of monument proclamation (see Appendix C), as well as containing numerous specific objects such as, Ironwood and Palo verde trees, Saguaros, Lesser long nosed bats, Bighorn sheep, Desert tortoises, Cactus ferruginous pygmy-owls, and Night blooming cereus. Wilderness Study Area designation should be considered not only for these above reasons, but also consider that past wilderness inventories, as documented in the *Arizona Mohave final Wilderness Environmental Impact Statement of 1989,* have identified crucial habitat for Desert tortoises, Gila monsters, and Bighorn sheep. This EIS also acknowledged that these species would benefit from wilderness designation.
2. It is not stated specifically in the record that the Ragged Top unit was excluded from Wilderness designation because of mineral potential and claims, but no other reasons can be concluded with review of the literature. Two exploration programs and two small mines were planned for this unit when the BLM made their 1989, "No Wilderness" alternative (USDI 1989). Since that time and the non-designation of Ragged Top these explorations and developments have not taken place. These proposals no longer pose a conflict with wilderness designation.
3. In the BLM's *Arizona Mohave final Wilderness Environmental Impact Statement of 1989* it was projected that motorized recreation would increase from 700-visitor use days/year (VDY) to 1250 VDY with the non-designation. It is hard to measure any amount of visitor use in this area with accuracy. The natural reclamation of a railroad grade in the western portion of this unit is one sign that motorized use has not increased. This route would be used if motorized use were high enough. Furthermore the IFNM proclamation prohibits Off Road Travel to facilitate

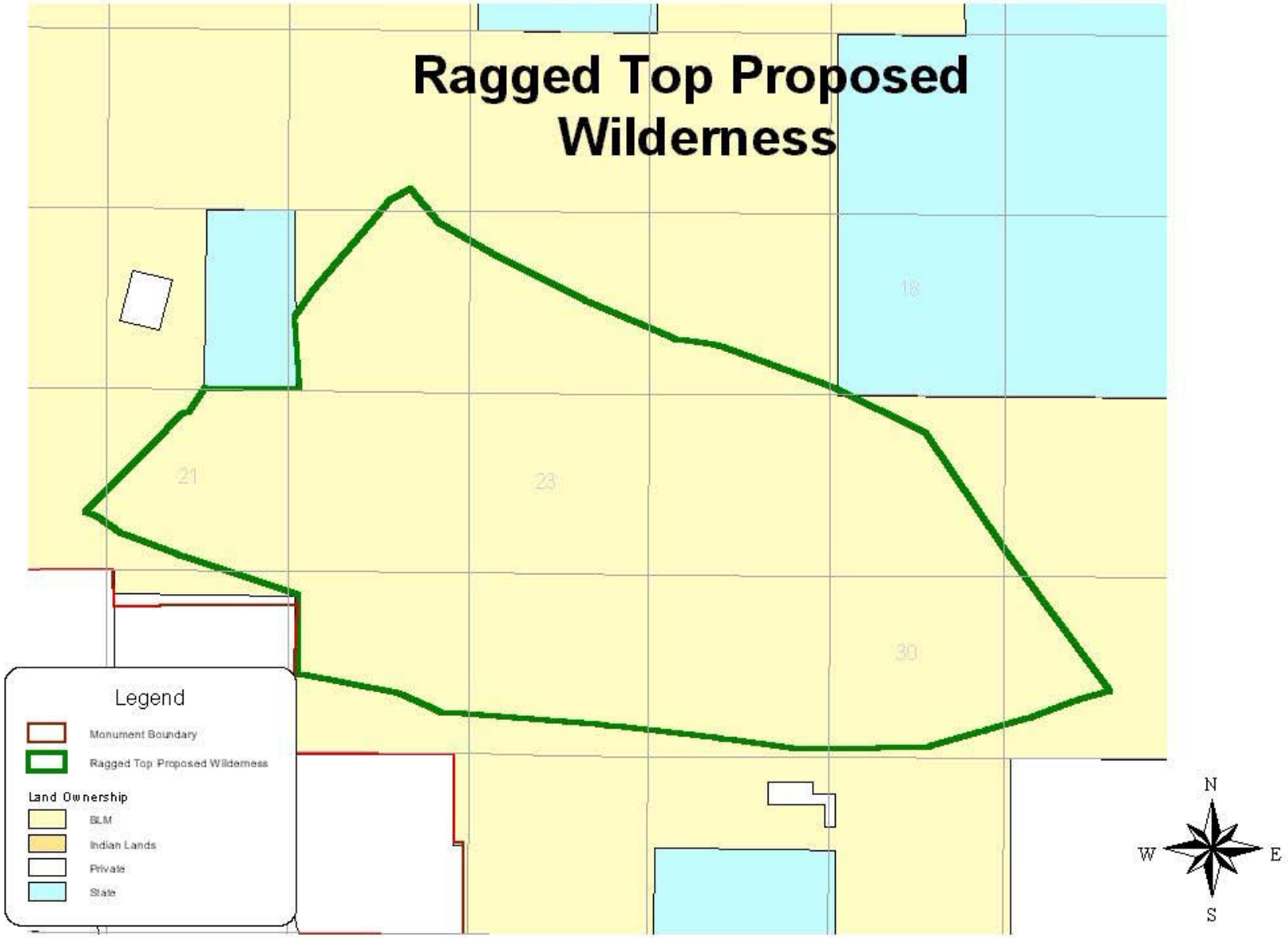
protection of the monument objects. This use will be drastically limited in the monument and in this area due to this mandate from the proclamation. With this information it can be concluded that future motorized use will not conflict with wilderness designation.

Special Management Considerations

Currently the Ragged Top area receives an unknown amount of use. Some of this use is located in critical Bighorn sheep habitat. The BLM should consider tracking this use and the areas used to determine its affects on the Bighorn sheep lambing grounds and movement corridors. The BLM should also work in conjunction with Arizona Game and Fish to develop plans for seasonal closures of these critical areas. The BLM should also consider these areas with any permanent trail development in these areas.

Conclusion

The Ragged Top proposed Wilderness Study Area meets and exceeds the criteria for wilderness as outlined in section 4 (c) of the Wilderness Act. The monument proclamation, critical wildlife habitat, new conditions outlined by the AWC, and past and present public support for wilderness overwhelmingly suggest that this area be protected. Ragged Top has been considered the “Crown Jewel” by the monument proclamation and should be managed as such using wilderness designation to permanently protect this centerpiece of the monument.


Ragged Top Proposed Wilderness
18
21
23
30
Legend
Monument Boundary
Ragged Top Proposed Wilderness
Land Ownership
BLM
Indian Lands
Private
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N
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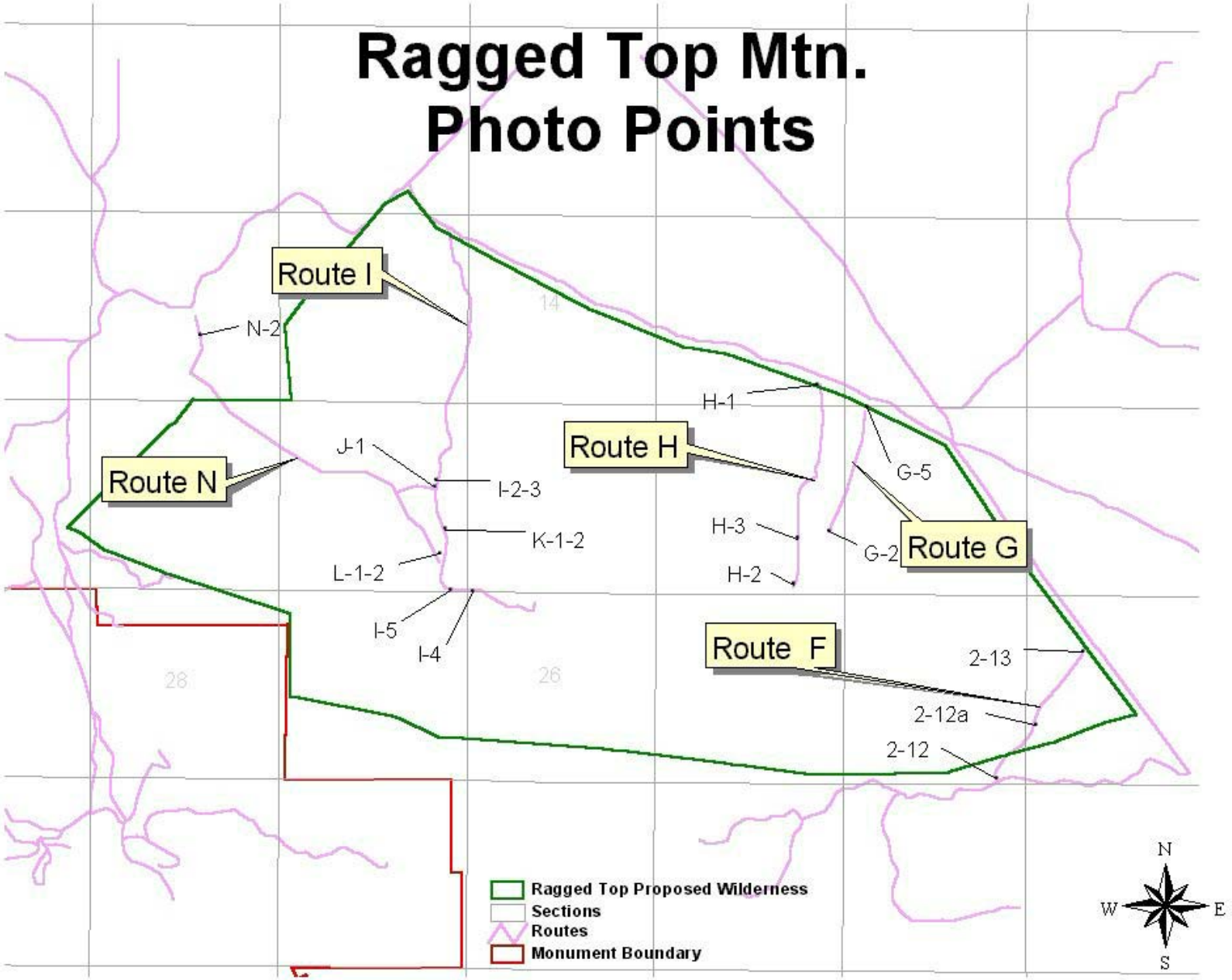
Ragged Top Mtn.
Photo Points
Route I
N-2
Route N
J-1
I-2-3
K-1-2
L-1-2
I-5
I-4
Route H
H-1
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14
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Ragged Top Proposed Wilderness
Sections
Routes
Monument Boundary
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W
E
S

N-2

I-3

I-2

K-1

J-1

L-2

K-2

K-1

I-4

I-5

G-2

G-5

H-1

H-3

H-2

2-13

2-12a

West Silver Bell Mountains

Unit Description:
This unit is approximately 3 miles northwest of the Silverbell Mine and 22 miles from Marana. The Silver Bells rise above the plain of Aquirre Valley. The unit consists of small rolling volcanic hills with well-developed bajadas and plains. There are several small washes within the unit. Vegetation is Palo verde-Saguaro with large Ironwood trees in the washes. The unit is bounded by a power line and state land on its southern side and roads on all other sides.

Wilderness Characteristics

Size: 8,598 acres with the potential to be 9,238 with acquisition of state trust lands.

Naturalness: The West Silver Bell Mountains are unique in the surrounding desert landscape. Many desert mountain ranges tower above large flat basins, the West Silver Bells are rounded hills that give the

visitor a different experience. These rounded hills have an abundance of Ocotillo and grasses growing on them. In the washes some of the largest Ironwood trees in the new national monument can be found. Desert tortoise use these deeply incised washes in this area as well as deer, javelina, and even migrating Bighorn sheep. Some of the flat areas in this unit contain large Cholla gardens, housing many Cactus wrens and Jack rabbits. Many of the the past impacts from mining prospects have begun to revegetate.

Guzzlers: There is one Arizona Game and Fish water catchment/guzzler in the West Silver Bell Mountains. The BLM Handbook H-8550-1 Interim Management Policy for Lands Under Wilderness Review gives further direction in regards to water catchments/guzzlers in chapter 3, section G.(4), "Certain permanent installations may be permitted to maintain or improve conditions for wildlife (USDI 1995)." Also in Chapter 3 section G.(4)(a) The handbook directs that "Guzzlers may be maintained…" This direction given to the BLM does not make the existence of water catchments a factor in determining naturalness if they enhance the wilderness characteristics of the area by maintaining native wildlife populations (USDI 1995). Furthermore, in appendix D. of handbook H-8550-1 the BLM interprets the "…minimum requirements for the administration of the area…" as stated in The Wilderness Act of 1964 section 4(C). In this appendix direction is given on how range and big game wildlife developments are to be managed under the "Minimum Data Requirements" and the "Maximum Acceptable Impacts" standards (USDI 1995). These standards and the studies to determine how water catchments/guzzlers enhance native wildlife populations would be applied to all existing wildlife waters with designation of the West Silver Bell Mountains as a Wilderness Study Area (WSA).

Outstanding Opportunities for Solitude or Primitive and Unconfined Recreation:

The West Silver Bell Mountains proposed Wilderness Study Area unit has both opportunities for solitude and primitive and unconfined recreation. The opportunities for both exist within all or most of the

unit. The BLM's Wilderness Inventory and Study Procedures Handbook H-6310-1.22 section (b)(1) gives direction on the assessment of solitude in inventory units. In this section five features for evaluating solitude are given, which are all addressed below.

k. Size and configuration: The unit meets the 5,000-acre size criteria, and does not have long, narrow, or irregular extensions and/or cherrystems.

l. Topographic screening: The topographic screening is outstanding in this unit because of the many small canyons and washes that a network of small rolling mountains provide.

m. Vegetative screening: Vegetative screening is present where Ironwood and Palo-verde trees grow in the washes. There is less than excellent vegetative screening on the south facing hillsides in this unit.

n. Ability of user to find a secluded spot: seclusion in the many washes and canyons is not difficult. There are also hilltops within the unit that are surrounded by larger mountains that isolate the visitor allowing for outstanding opportunities for solitude. The surrounding landscape appears natural in all directions but southeast towards the Silverbell mine.

o. Presence of outside sights and sounds: Asarco's Silver Bell mine is the only outside disturbance of significance. It affects solitude conditions on the periphery of the south eastern edge of the unit, but not into the interior of this unit. The Endangered American Wilderness Act of 1978 addressed the issue of "purity" and how congress did not intend for wilderness designation to be completely isolated from the "sights and sounds" of man (H. R. 95-540). In the house report (No. 95-540) referring to the Sandia Mountain Wilderness in New Mexico as quoted in the BLM handbook H-6310-1 states:

> "The "Sights and sounds" of nearby Albuquerque, formerly considered a bar to wilderness designation by the Forest Service, should, on the contrary, heighten the public's awareness and appreciation of the area's outstanding wilderness values."

This direction given by Congress helps to address concerns of how the Silver Bell Mine might affect the wilderness characteristics from outside the West Silver Bell Mountains.

Primitive and Unconfined Recreation: The West Silver Bell Mountains contain a diversity of possible primitive and unconfined recreational activities as outlined in BLM's handbook H-6310-1.2 section 1(b)2. The West Silver Bells have opportunities for Backpacking, hunting, horseback riding, photography, bird watching, and sightseeing for botanical, and zoological features, are all possible primitive and unconfined recreational opportunities within the West Silver Bell Mountains.

Supplemental Values: Various supplemental values as described in section 2(c) of The Wilderness Act exist in the West Silver Bell Mountains.

Special Status within West Silver Bell Unit

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The Arizona Wilderness Coalition believes that wilderness preservation is not only important for human needs, but for the conservation of species as well. The following section represents detailed information about the supplemental wilderness values of Special Status species in the proposed Ragged Top Wilderness Study Area Unit. All species described here are at risk and would be more adequately protected with wilderness designation.

Gopherus agassizii

Common name: Sonoran desert tortoise
Class: Reptilia
Order: Chelonia
Suborder: Cryptodira
Genus: Gopherus
Species: agassizii

Status: A candidate for listing as a threatened species

Identification: The Sonoran desert tortoise has inhabited earth for 67 million years. It is a flat, pear shaped herbivore that is able to live in extreme heat where the ground temperatures can exceed 140 degrees F. It can do so by digging underground burrows to escape the high temperatures. The tortoise can spend 95% of its life in these burrows where it is also protected from freezing while it is in its dormant period (November- March). Both sexes of the tortoises have an anterior extension on the lower shell. In males the horn is often larger and upturned. Males use these to flip other males onto the back when fighting other males. The hind feet differ greatly from the front feet in both sexes. The hind feet are elephantine and the front feet are flattened and muscular. The females use their front feet to dig nests.

A curious behavior pattern found in this species is they dig catchment basins in the soil to catch water when it rains. Also, they seem to remember where their basins are and are found waiting next to them when rain looks imminent.

Habitat: In the Sonoran Desert of Arizona tortoises live on steep, rocky hillsides in Palo verde and Saguaro cactus communities.

Range: The Sonoran population is defined as all individuals south and east of the Colorado River.

Diet: The main diet consists of herbs, grasses, some shrubs, new cacti growth and cacti flowers, and dry forage as well as annual germination.

Reproduction: Courting and copulation occur mostly when tortoises are above ground in late summer or early fall. Eggs are laid in May, June, and July. Nests are dug near the front of the burrow. No more than 1 hatchling from every 15 to 20 nests will reach sexually maturity. Sexually maturity may take 12 to 20 years. These two factors lead to a low population turnover. The number of eggs is between 4-8. Sexually maturity may take 12 to 20 years. These factors lead to a low population turnover. Mating Season is from Aug.-Oct, incubation Period is 90-120 days, and the typical lifespan is 80-100 yrs. The birth interval is 2-3 years.

Threats:

- Illegal collection by humans for pets (poaching)
- Forage plant loss caused by overgrazing of cattle and the introduction of invasive species
- Urban development and mining, which has lead to destruction of habitat
- Increased raven population due to urban expansion
- Upper respiratory disease due to pet tortoises released into the wild
- Off road vehicles crushing burrows and young
- Hikers and mountain bikers

Conservation Recommendations:
Since 1980, the Desert tortoise population has declined 90%. This species is a keystone species in the Sonoran Desert. The species decline is caused from numerous sources both human made as well as natural. Ravens, Gila monsters, Kit foxes, and other species are natural predators that eat eggs and juveniles. Remote populations appear to be in stable condition however populations are declining in populated urban areas and recreational areas. Development is infringing on these remote areas making the need to protect these species great and extremely necessary. With increasing developments raven populations are increasing as well leading to a decrease of tortoise eggs and young. The status in Arizona is considered by some to be less serious than that of the Mohave desert tortoise but the situation

warrants more research and protection due to the fact that Arizona is the second largest growing state. It is estimated that Pima county is the fastest growing county in Arizona and will soon reach the size and population of Phoenix. The Mohave desert tortoise is listed as endangered and became so due to the exact same threats the Sonoran desert tortoise is facing.

Recommendations:

- Complete closer of area and designation as wilderness.
- Restore and protect existing potential habitat as well as existing habitat. This will help Sonoran desert tortoise thrive and populations to increase.
- The public needs to be educated about the negative effects of human impacts as well as how they can protect tortoise habitat.
- Restricting human visitation where this species is known to dwell and where potential habitat exists. This should happen especially during the breeding season.
- ORV use needs to be regulated in all areas.
- Existing roads through identified or potential habitat need to be closed.

See general supplemental values section by Mike Seidman for description of Bighorn sheep supplemental values.

The proposed West Silver Bell Mountains Wilderness Study Area of Ironwood National Monument, if designated as wilderness, would protect a significant portion of Sonoran desert and species diversity. Immediate action will increase the chance of survival of the above species as well as numerous others. Protection and management recommendations are: Establish a large area of protected wilderness as defined by the Wilderness Act that allows for safe movement between all sections, prohibit any ORV use and mining in this wilderness area, restore and rehabilitate damaged areas, and educate the local community about how they can help in the process of monitoring and maintaining a healthy wilderness area.

Conflicting Resource Issues:

4. Minerals- The Ironwood Forest Preplan Analysis outlines very clearly the state of minerals in the monument in the following text:

> "Creation of the IFNM withdrew all public lands and Interest in lands from entry, location, and leasing under the mineral leasing and mining laws. As of June 9, 2000, mining claims cannot be located within the IFNM and mining leases cannot be issued. Claims and leases that existed prior to the date of creation of the IFNM have valid existing rights. In order to establish valid existing rights for a mining claim, a validity examination must be conducted to determine if the claim supported a discovery of a valuable mineral deposit prior to the date of the Proclamation. Currently, there are 387 active mining claims within the IFNM, held by seven individuals or groups. Sixty-six percent of the claims are held by one company, with three other companies or individuals at 13%, 10%, and 9%respectively. There are no active mineral leases."

There are no active mining claims within the proposed West Silver Bell Mountains Wilderness Study Area. A maximum of 145 claims could exist that will have to under go validity examinations with any plan to develop in the Ironwood Forest National Monument or in a Wilderness Study Area. The existence of the National Monument has the same regulations in regards to mining laws as Wilderness Study Areas.

2.Off Road Vehicle use- The West Silver Bell Mountains have not been a popular Off Road Vehicle area and do not contain significant impacts from this type of use.

Historical Review, The Arizona BLM Wilderness Inventory (1978-82)

The BLM's initial wilderness inventories were completed under the requirements of section 603 of the Federal Lands Policy and Management Act (FLPMA) of 1976. The BLM started an initial inventory of all public lands under their management in Arizona and sorted out all lands that "clearly and obviously" lacked wilderness characteristics. Through this process the West Silver Bell Mountains were chosen as an initial inventory area. In the Initial Inventory process started in 1978 the BLM reported in their "Wilderness Review, Arizona Initial Inventory of Public Lands Administered by Bureau of Land Management Decision Report September 1979 that, "Much comment expressed the opinion that the unit was not outstanding. There was no

specific information which could be verified." The BLM chose to intensively inventory this area, as none of the comments received were sufficient to eliminate any part of the unit (USDI 1979).

In the *Wilderness Review, Arizona Intensive Inventory of Public Lands Administered by BLM Proposal Report 1980*, The BLM recommended to drop the unit from further study (USDI May 1980). This recommendation was based on the following statement:

" Opportunities for solitude are not considered outstanding in the unit because of only fair vegetative screening and a lack of topographic complexity. The unit does provide some opportunities for primitive and unconfined recreation, but the area's lack of complexity, slight elevation change, and the general lack of large open spaces limits these activities and makes them less than outstanding."

In the BLM's Decision Report produced in November of 1980 the West Silver Bell Mountains were dropped from further study (USDI November 1980). This decision was based on flawed rationale and lack of consideration for supplemental wilderness values.

The Arizona Wilderness Coalition has reviewed the historical material for the West Silver Bell Mountains wilderness inventories and finds that the BLM's rationale for dropping this unit was severely flawed and inconsistent with the BLM's own inventory processes. The following information is part of the "New Information" criterion as explained in the BLM H-6310-1 handbook section .06 (E)(b):

1.) In the BLM's inventory of the West Silver Bell Mountains there was never any mention of supplemental wilderness values as explained in section 2 (c) of The Wilderness Act of 1964, "may also contain ecological, geological, or other features of scientific, educational, scenic or historical value." Furthermore, the BLM Handbook H-6310-1 in section .2 (C) Other Resource Values and Uses , explains that the BLM must document how WSA designation would affect resource values other than recreation.The handbook goes on to explain how legislative history of The House Report (HR 94-1163) from the Interior and Insular Affairs Committee on FLMPA explains that other resource values such as watershed and water yield,

wildlife habitat preservation, preserving natural plant communities and similar natural values should be considered as to how they augment the multiple use management of adjacent or nearby lands (USDI 2001). This mandate coupled with the values placed on Ironwood Trees and the rest of the Sonoran desert vegetative plant communities make protection of the West Silver Bell Mountains as wilderness a necessary step. The density and size of Ironwood trees in the West Silver Bells provides outstanding suplemental information.

2.) The BLM H-6310-1 handbook explains the direction given by The Wilderness Act in reference to "…outstanding opportunities for solitude or primitive and unconfined type of recreation." The word "or" in this sentence means that a proposed wilderness does not have to possess outstanding opportunities for both solitude and primitive recreation; it only has to possess one or the other. (USDI 2001 H-6310-1, Section .22(A)(1)(b), page 21)." This clarification is important considering that the West Silver Bell Mountains did qualify as having wilderness characteristics because they possessed opportunities for primitive and unconfined recreation.

3.) The BLM refers to "primitive and unconfined recreation" as "…those activities that provide dispersed, undeveloped recreation which do not require facilities or motorized equipment." USDI 2001 H-6310-1, Section .22(A)(1)(b), page 21) In no way does lack of complexity or elevation change factor into the assesment of primitive and unconfined recreation in BLMs inventory procedures. The BLM statement, "[The] general lack of large open spaces limits these activities and makes them less outstanding." This seems to be a contradictory statement in that the presence of "large open spaces" would contain even less elevation change and complexity. This evaluation may not prove that outstanding opportunities for primitive and unconfined recreation do exist, but it does present new information in the fact that these

wilderness characteristics were not adaquetly inventoried in the initial and intensive processes.

4.) As explained above part of the rationale for dropping the west Silver Bell Mountains from the inventory process was due to their lack of outstanding opportunities for solitude. Specifically the BLM cited that the unit contained, "…only fair vegetative screening and a lack of topographic complexity." (USDI May 1980) The BLM's handbook addresses such evaluations by instructing the staff to avoid using lack of terrain variation or vegetation, or size as disqualifying conditions for outstanding opportunities for solitude (USDI 2001 [H-6310-1, Section .13(B)(3)(c)(2)]). Do not assume that simply because an area or portion of an area is flat and/or unvegetated, it automatically lacks an outstanding opportunity for solitude (USDI 2001 [H-6310-1, Section 13(B)(3)(c)(1)(b), page 14]). Similarly, do not conclude that simply because an area is relatively small, it does not have an outstanding opportunity for solitude. Consideration must be given to the interrelationship between size, screening, configuration, and other factors that influence solitude (USDI 2001 [H-6310-1, Section .13(B)(3)(c)(1)(b), page 14]).

5.) The BLM does instruct its staff to consider factors or elements influencing solitude including size, natural screening, and the ability of the user to find a secluded spot (USDI 2001 [H-6310-1, Section .13(B)(3)(c)(1)(c)], page 15). If these criteria are applied to the West Silver Bell Mountains then the inventory record may be corrected and the West Silver Bells should qualify to be a Wilderness Study Area.

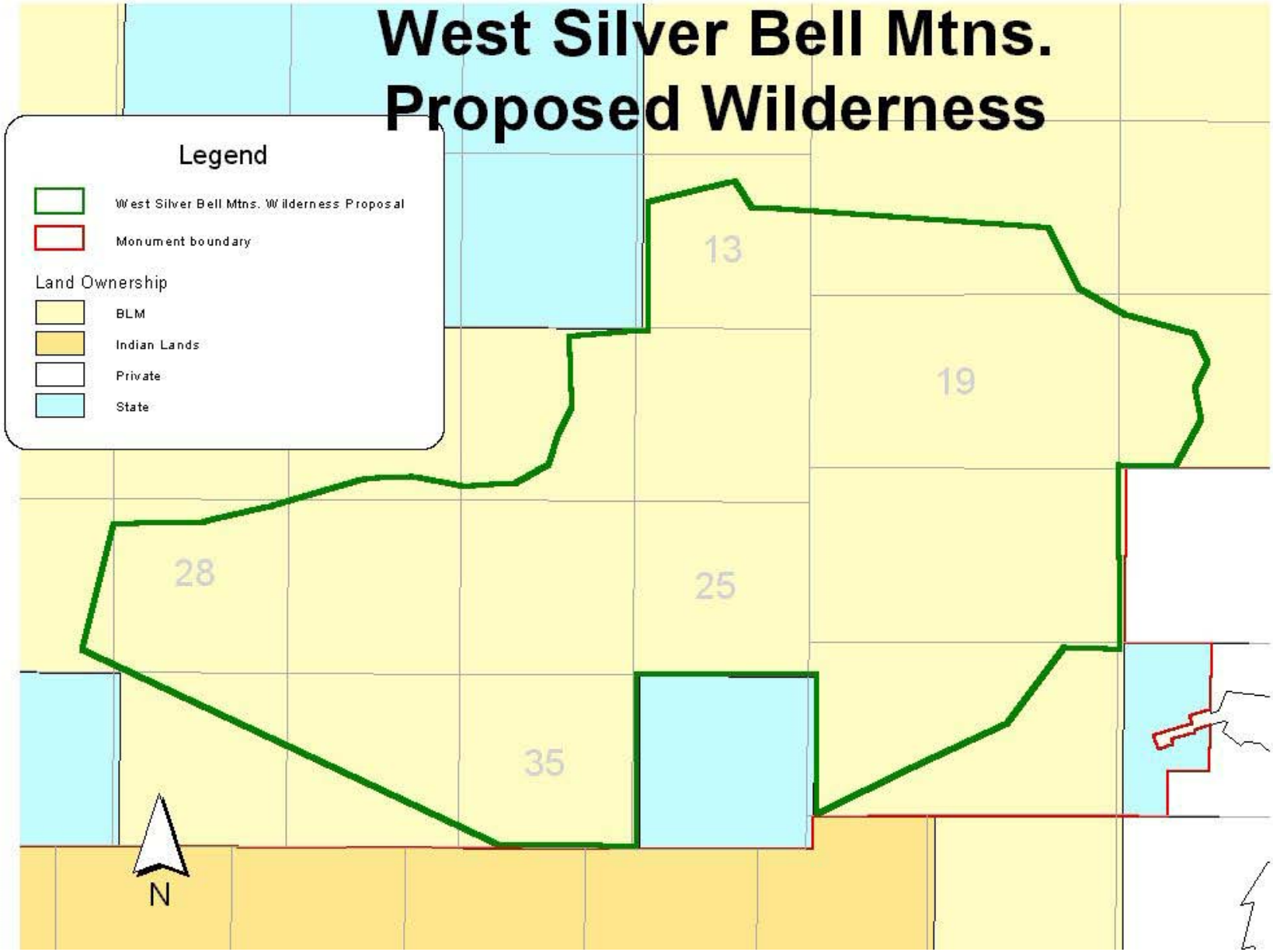
The historical review of the initial and intensive inventory processes for the West Silver Bell Mountains clearly shows that the BLM must reconsider Wilderness Study Area designation for this unit. This review provides a piece of the,"New Information" criterion as explained in the BLM H-6310-1 handbook section .06 (E)(b). The BLM must

consider many aspects of new information, including but not limited to: monument designation, population expansion, Threatened and Endangered species, and changing recreational uses. In conclusion, the BLM must reconsider wilderness for the West Silver Bell Mountains to evaluate the flaws that occurred in past inventories, as well as for the purposes of protecting valuable wildlands.

Conclusion

The West Silver Bell Mountains are unique in the Sonoran desert. This uniqueness is attributed to the unit's overly large washes in comparison to its smaller mountains unlike other desert mountain ranges. Many wilderness areas in Arizona and across the western United States have large rugged mountains or deeply cut canyons that are largely inaccessable by means other than by hiking. This practice of designating these types of areas has no major flaws, but what is flawed, is the lack of less rugged areas in the National Wilderness Preservation System. Just because an area does not have extremely difficult rugged terrain passing through the most beautiful forests or canyons imaginable with adversity lurking around every corner doesn't mean it isn't wilderness. This concept of wilderness cannot be found explained anywhere in the Wilderness Act. The wilderness act simply says that wilderness is an area of undeveloped federal land, natural processes are occuring without the hinderance of man, has no permant improvements, and contains 5,000 acres or is of manageable size (P.L. 88-577; 16 U.S.C. § 1131(c)). This is simply put as it was in the Wilderness Act of 1964. The West Silver Bell Mountains do posses these things and that is what counts, not that they don't have outstanding scenic qualities when looking at them. Their true wilderness qualities as with any area can only be found by going within.

The West Silver Bell Mountains meet all the requirements for Wilderness Study Area designation. The documentation provided here and in the general justifications section of this report supply the required "new and supplemental information" to make this proposal a valid reccomendation in the planning process.


West Silver Bell Mtns.
Proposed Wilderness
Legend
West Silver Bell Mtns. Wilderness Proposal
Monument boundary
Land Ownership
BLM
Indian Lands
Private
State
13
19
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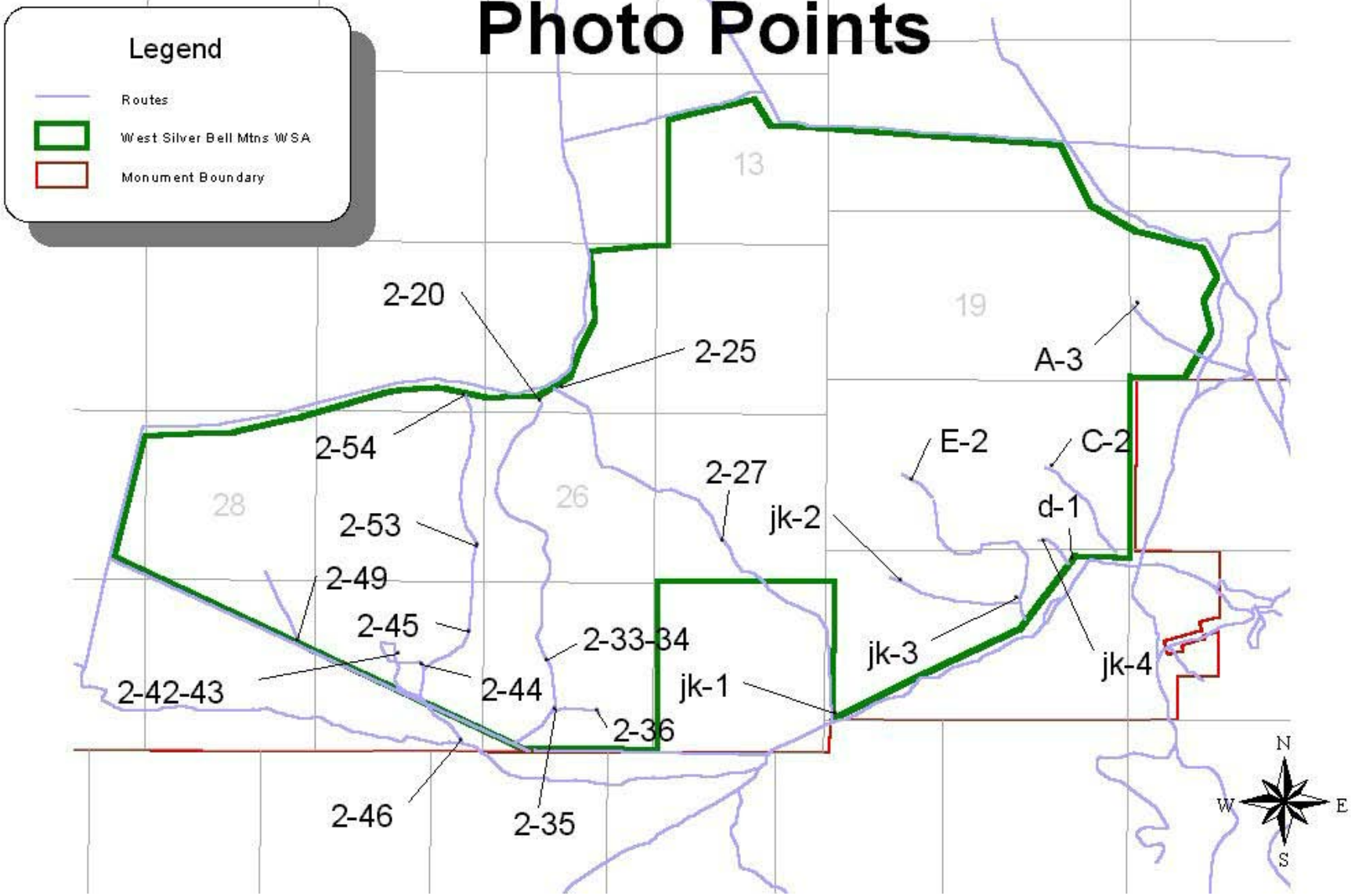
West Silver Bell Mtns. Photo Points



jk-1

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E-2

D-1

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Historic Gravesite

Silver Bell Mountains

Unit Description:
The Silver Bell Mountains unit is just south of the Ragged Top unit inside the Ironwood Forest National Monument. The two units are separated by a power line corridor and private land. Roads bound the eastern and southern boundaries, and the western boundary is the Silver Bell Mine. The western boundary also consists of the crest of

the Silver Bell Mountains including Silver Bell peak at above 4,000 feet. Bighorn Sheep use this area extensively for mating and lambing. The unit contains large fan like bajadas that extend form the peaks into the desert flats with numerous washes containing many large ironwood and mesquite trees.

Wilderness Characteristics

Size: 7,489 acres with acquisition of state trust lands.

Naturalness: The Naturalness of the Silver Bell Mountains unit can be seen at the rocky crest of the Silver Bell Mountains at 4,000 feet to the eastern Creosote flats around 2100 feet. this range in elevation and the short distance in which it occurs makes for a high species diversity within this unit. The unit contains examples of upper and lower Sonoran desert life zones. The Nikol's turks head and Varied fishhook cacti, Ironwood trees, large barrel cactus, creosote and Bursage all exist within this unit. The bajadas have dense stands of the Palo-verde/suguaro plant communities providing valuable habitat for the cactus ferruginous pygmy-owl. Many of the washes are lined with large mesquite and Ironwood trees. These washes also provide valuable habitat for the Desert tortoise. The upper elevations of this unit provide the local Bighorn sheep herd with valuable habitat. The unit has three route intrusions that enter the unit from the eastern boundary. Two of these are routes created during mining explorations and the other is a route a Arizona Game and Fish water catchment.

Guzzlers: There are three Arizona Game and Fish water catchment/guzzler in the Silver Bell Mountains. The BLM Handbook H-8550-1 Interim Management Policy for Lands Under Wilderness Review gives further direction in regards to water catchments/guzzlers in chapter 3, section G.(4), "Certain permanent installations may be permitted to maintain or improve conditions for wildlife (USDI 1995)." Also in Chapter 3 section G.(4)(a) The handbook directs that "Guzzlers may be maintained…" This direction given to the BLM does not make the existence of water catchments a factor in determining naturalness if they enhance the wilderness characteristics of the area by maintaining

native wildlife populations (USDI 1995). Furthermore, in appendix D. of handbook H-8550-1 the BLM interprets the "…minimum requirements for the administration of the area…" as stated in The Wilderness Act of 1964 section 4(C). In this appendix direction is given on how range and big game wildlife developments are to be managed under the "Minimum Data Requirements" and the "Maximum Acceptable Impacts" standards (USDI 1995). These standards and the studies to determine how water catchments/guzzlers enhance native wildlife populations would be applied to all existing wildlife waters with designation of the Silver Bell Mountains as a Wilderness Study Area (WSA).

Outstanding Opportunities for Solitude or Primitive and Unconfined Recreation:

The Silver Bell Mountains proposed Wilderness Study Area unit possesses both opportunities for solitude and primitive and unconfined recreation. The opportunities for both exist most parts of the unit. The BLM's Wilderness Inventory and Study Procedures Handbook H-6310-1.22 section (b)(1) gives direction on the assessment of solitude in inventory units. In this section five features for evaluating solitude are given.

h. Size and configuration: The unit meets the 5,000-acre size criteria, nor does it have long and narrow or have irregular extensions or cherrystems.
i. Topographic screening: The unit has numerous washes and some canyons running from the crest of the Silver Bells to the east providing the visitor with ample elevational change to allow for screening from other visitors.
j. Vegetative screening: In the bajadas just below the rugged mountains the vegetative screening is exceptional with a diversity of vegetation ranging from stands of saguaro and palo verde to wide expanses of creosote and bursage. Inside and along washes in the flat areas vegetative screening increases.
k. Ability of user to find a secluded spot: seclusion in the many washes and canyons is not difficult.
l. Presence of outside sights and sounds: The Silver Bell Mine forms the western boundary of this unit along the crest of the Silver Bell

Mountains, which is by far one of the most noticeable outside sights and sounds a wildenress visitor could experience. The Endangered American Wilderness Act of 1978 addressed the issue of "purity" and how congress did not intend for wilderness designation to be completely isolated from the "sights and sounds" of man (H. R. 95-540). In the house report (No. 95-540) referring to the Sandia Mountain Wilderness in New Mexico as quoted in the BLM handbook H-6310-1 states:

> "The "Sights and sounds" of nearby Albuquerque, formerly considered a bar to wilderness designation by the Forest Service, should, on the contrary, heighten the public's awareness and appriciation of the area's outstanding wilderness values."

This standard should be applied in this case. The evaluation of solitude does not necessarily mena the visitor can find a secluded spot in all places within the unit, only that solitude is available someplace within the unit (USDI 2001).

Primitive and Unconfined Recreation: The Silver Bell Mountains allow for a variety of primitive and unconfined recreational activities. The Sawtooths offer various levels of hiking, from flat walking in the bajadas, to rock scrambling on the nearby peaks and ridges. Backpacking, hunting, horseback riding, photography, bird watching, and sightseeing for geological, zoological, and especially botanical features are all possible primitive and unconfined recreational opportunities within the Silver Bell Mountains. Overnight camping within the unit offers outstanding opportunities for star gazing with a unique contrast of how many stars visitors can see to the east with the light pollution from the nearby cities of Marana and Tucson. To the West though the sky is illuminated with thousands of stars becoming more and more numerous as one looks to the western hinterlands of the vast Sonoran desert.

Supplemental Values: Various supplemental values as described in section 2(c) of The Wilderness Act exist in the Sawtooth Mountains. Most notably is the Bighorn sheep habitat, which is fully explained in the General Justifications section under supplemental values.

Special Status Species within the Silver Bell Unit

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The Arizona Wilderness Coalition believes that wilderness preservation is not only important for human needs, but for the conservation of species as well. The following section represents detailed information about the supplemental wilderness values of Special Status species in the proposed Silver Bell Mountains Wilderness Study Area Unit. All species described here are at risk and would be more adequately protected with wilderness designation.

Gopherus agassizii

Common name: Sonoran desert tortoise
Class: Reptilia
Order: Chelonia
Suborder: Cryptodira
Genus: Gopherus
Species: agassizii

Status: A candidate for listing as a threatened species

Identification: The Sonoran desert tortoise has inhabited earth for 67 million years. It is a flat, pear shaped herbivore that is able to live in extreme heat where the ground temperatures can exceed 140 degrees F. It can do so

by digging underground burrows to escape the high temperatures. The tortoise can spend 95% of its life in these burrows where it is also protected from freezing while it is in its dormant period (November- March). Both sexes of the tortoises have an anterior extension on the lower shell. In males the horn is often larger and upturned. Males use these to flip other males onto the back when fighting other males. The hind feet differ greatly from the front feet in both sexes. The hind feet are elephantine and the front feet are flattened and muscular. The females use their front feet to dig nests.

A curious behavior pattern found in this species is they dig catchment basins in the soil to catch water when it rains. Also, they seem to remember where their basins are and are found waiting next to them when rain looks imminent.

Habitat: In the Sonoran Desert of Arizona tortoises live on steep, rocky hillsides in Palo verde and Saguaro cactus communities.

Range: The Sonoran population is defined as all individuals south and east of the Colorado River.

Diet: The main diet consists of herbs, grasses, some shrubs, new cacti growth and cacti flowers, and dry forage as well as annual germination.

Reproduction: Courting and copulation occur mostly when tortoises are above ground in late summer or early fall. Eggs are laid in May, June, and July. Nests are dug near the front of the burrow. No more than 1 hatchling from every 15 to 20 nests will reach sexually maturity. Sexually maturity may take 12 to 20 years. These two factors lead to a low population turnover. The number of eggs is between 4-8. Sexually maturity may take 12 to 20 years. These factors lead to a low population turnover. Mating Season is from Aug.-Oct, incubation Period is 90-120 days, and the typical lifespan is 80-100 yrs. The birth interval is 2-3 years.

Threats:

- Illegal collection by humans for pets (poaching)
- Forage plant loss caused by overgrazing of cattle and the introduction of invasive species
- Urban development and mining, which has lead to destruction of habitat
- Increased raven population due to urban expansion

- Upper respiratory disease due to pet tortoises released into the wild
- Off road vehicles crushing burrows and young
- Hikers and mountain bikers.

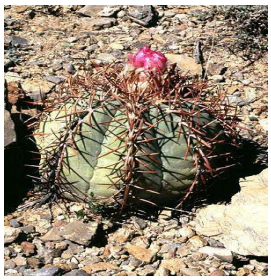
Conservation Recommendations:
Since 1980, the Desert tortoise population has declined 90%. This species is a keystone species in the Sonoran Desert. The species decline is caused from numerous sources both human made as well as natural.

Ravens, Gila monsters, Kit foxes, and other species are natural predators that eat eggs and juveniles. Remote populations appear to be in stable condition however; populations are declining in populated urban areas and recreational areas. Development is infringing on these remote areas making the need to protect these species great and extremely necessary. With increasing developments raven populations are increasing as well leading to a decrease of tortoise eggs and young. The status in Arizona is considered by some to be less serious than that of the Mohave desert tortoise but the situation warrants more research and protection due to the fact that Arizona is the second largest growing state. It is estimated that Pima county is the fastest growing county in Arizona and will soon reach the size and population of Phoenix. The Mohave desert tortoise is listed as endangered and became so due to the exact same threats the Sonoran desert tortoise is facing.

Recommendations:
- Complete closer of area and designation as wilderness.
- Identify, restore and protect existing potential habitat. This will help Sonoran desert tortoise thrive and populations to increase.
- The public needs to be educated about the negative effects of human impacts as well how they can protect tortoise habitat.
- Restricting human visitation where this species is known to dwell and where potential habitat exists. This should happen especially during the breeding season.
- ORV use needs regulated in all areas.
- Existing roads in potential and identified habitat need to be closed.

- Protect any known habitat of this species and enforce any regulations.

Echinocactus horizonthalalonius var. nicholii



Common name: Nichol Turk's Head Cactus
Family: Cactaceac
Genus: Echinocactus
Species: horizonthalonius

Status: This species was listed as endangered in 1979. It is also protected from international trade. These plants are in danger of extinction due to the decrease of available growing sites and their population dynamics.

Identification: This cactus grows only in Arizona upland division of the Sonoran shrub biome. It is a barrel cactus that ranges from blue-green to yellow-green in color. It has eight ribs that spiral on the trunk and it reaches a maximum height of 18" with a diameter of 8". The flowers are bright purple or pink and bloom in April to May. Each areole has three red central spines and five thin radial spines surrounding the central three. This species has a very slow growing rate and can take up to ten years to reach two inches. Population dynamics are slow and the turnover rate is low. It may have a lifespan of 75-100 years.

Habitat: This species occurs in semi-arid Sonoran desert shrub in limestone outcroppings and limestone derived soils. It tends to grow on terraces and elevations from 2,400 to 4,100 feet. Some plants are found growing on alluvial fans. These alluvial fans are poor habitat for trees and shrubs therefore it is an open, sunny habitat for these cacti.

Range: This species is restricted to the Vekol and Waterman Mountains in Pima County Arizona, and to the Sierra del Viejo of Northwestern Sonora, Mexico.

Diet: Not Applicable

Reproduction: Not Applicable

Threats:

- Copper mining
- Urban development
- Highway construction
- Hikers and campers straying from trail
- Off-road vehicle use
- Other serious threats include limestone quarrying, collecting, invasive species, and erosion.

Conservation Recommendations:

- Primary recommendation is a complete closure of this area and wilderness designation.
- This is a rare species with 90% of this species historic range being in Pima County. All known populations and suitable habitat should be protected and conserved.
- All active mines should relocate any species to safe optimal habitat.
- All inactive mines should remain closed.
- All natural populations need to be maintained, protected, and restored.
- Invasive species control needs to happen.
- All Nichol Turk's Head that are found on private lands under development should be removed to suitable, protected habitat.
- The general public should be educated to increase their awareness of their impact and the imminent danger facing this species.
- Mines near where this species grow need to be determined and area needs to be protected or restored to limit erosion.

Mammillaria viridiflora

Common name: Varied Fishhook cactus
Family: Cactaceae
Genus: Mammillaria
Species: viridiflora
Status: Unknown

Identification: These are some of the smallest of the cacti found in the southwest. They have small, round shapes covered with delicate layers of spines, with small, fine fishhooks like structures. These small cacti often go unnoticed by the casual observer. It is a solitary plant with a depressed apex and prominent cylindrical tubercules. 5 to 10cm (2 to 4in) tall, 1 to 6cm (1-1/2 to 2-1/2in) in diameter. Its Spines are 1 to 3 central spines, 1 to 2cm (3/16 to 7/8in) long. They are reddish-brown, all curving and hooked. 10 to 20 radial spines 1 to 2cm (1/2 to 3/4in) long spreading around the plant and turning gray with age. It flowers in July producing 4cm (1-3/4in) diameter magenta to purple blooms. Pointed petals and a darker mid-stripe. Bees pollinate this species.

Habitat: Often found under desert shrubs and in the shadows of larger plants and cactus. It is found in gravelly soils of plains and hills in grassland, desert grassland, and woodland. In Arizona it has been found in Apache County, Pinal County between Superior and Sonora, and Cochise County.

Range: 1500 to 2500m (5000 to 8000ft) elevation in Apache Co., Arizona, Cantron, Grant, McKinley, Sandoval, Guadalupe, and Dona Ana counties of New Mexico, Franklin Mts., El Paso Co., Texas.

Diet: Not Applicable

Reproduction: Not Applicable

Threats:

- Grazing
- ORV use
- Human disturbance and trampling
- Invasive plant introduction
- Erosion from mines

Conservation Recommendations:

- Primary recommendation is a complete closure of this area and wilderness designation.
- All known populations and suitable habitat should be protected and conserved.
- All natural populations need to be maintained, protected, and restored.
- Invasive species control needs to happen.
- The general public should be educated to increase their awareness of their impact and the imminent danger facing this species.
- The potential mining and related activities cause erosion and trampling on hillsides. This destroys habitat for this species. Any existing mines should be following regulations that are placed upon them and all inactive mines should remain closed.
- ORV use should be regulated and regulations need to be enforced.
- Off trail hikers and campers can trample this species. Any trails that are near these plants should be diverted however; caution should be used during any trail maintenance to minimize trampling any other sensitive species.

The proposed Silver Bell Mountains Wilderness Study Area of Ironwood National Monument, if designated as wilderness, would protect a significant portion of Sonoran desert and species diversity. Immediate action will increase the chance of survival of the above species as well as numerous others. Protection and management recommendations are: Establish a large area of protected wilderness as defined by the Wilderness Act that allows for safe movement between all sections, prohibit any ORV use and mining in this wilderness area, restore and rehabilitate damaged areas, and educate the local community about how they can help in the process of monitoring and maintaining a healthy wilderness area.

Conflicting Resource Issues:

1.Minerals- The Ironwood Forest Preplan Analysis outlines very clearly the state of minerals in the monument in the following text:

> "Creation of the IFNM withdrew all public lands and Interest in lands from entry, location, and leasing under the mineral leasing and mining laws. As of June 9, 2000, mining claims cannot be located within the IFNM and mining leases cannot be issued. Claims and leases that existed prior to the date of creation of the IFNM have valid existing rights. In order to establish valid existing rights for a mining claim, a validity examination must be conducted to determine if the claim supported a discovery of a valuable mineral deposit prior to the date of the Proclamation. Currently, there are 387 active mining claims within the IFNM, held by seven individuals or groups. Sixty-six percent of the claims are held by one company, with three other companies or individuals at 13%, 10%, and 9%respectively. There are no active mineral leases."

There are no active mining claims within the proposed Silver Bell Mountains Wilderness Study Area (USDI 2001). There is no more than 50 claims that must under go validity examinations with any plan to develop in the Ironwood Forest National Monument or in a Wilderness Study Area. The existence of the National Monument has the same regulations in regards to mining laws as Wilderness Study Areas.

2.Off Road Vehicle use- Many of the existing routes have been kept open by irresponsible Off Road Vehicle users. Destruction of vegetative, geological, and archeological objects of the Ironwood Forest National Monument occurs mostly around highly impacted Off Road Vehicle routes (see photos: IFNM-1-47 thru51; IFNM-1-67 thru 73). The occurrence of alcoholic beverage containers, discharged ammunition, and torn up vegetation from Off Road Vehicle use occurs in the same areas, which leads to the conclusion that all of these uses are occurring together. Such actions are not appropriate anywhere.

Historical Review, The Arizona BLM Wilderness Inventory (1978-82)

The BLM's initial wilderness inventories were completed under the requirements of section 603 of the Federal Lands

Policy and Management Act (FLPMA) of 1976. The BLM started an initial inventory of all public lands under their management in Arizona and sorted out all lands that "clearly and obviously" lacked wilderness characteristics. Through this process the Silver Bell Mountains [unit # 2-198 (refered to as the East Silver Bell Mountains)] were chosen as an initial inventory area. In the Initial Inventory process started in 1978 the BLM reported in their "Wilderness Review, Arizona Initial Inventory of Public Lands Administered by Bureau of Land Management Decision Report September 1979 that,

"A field review of the unit showed that the southwest boundary was a road circling around the tailings pile of the Silver Bell copper mine. Adjacent external intrusions were considered to be sufficiently extraordinary to render the entire unit unnatural and the imprint of man significant. We conclude that this unit will not be intensively inventoried, and is therefore dropped from further review."

This statement is very difficult to interpret, but it seems to say that the unit is unnatural due to external influences, which in the Arizona Wildenress Coalition review has been determined as a flawed rationale. The following information is part of the "New Information" criterion as explained in the BLM H-6310-1 handbook section .06 (E)(b).Following is a detailed explanation of why past inventories are flawed.

1.) In the BLM's inventory there was never any mention of supplemental wilderness values as explained in section 2 (c) of The Wilderness Act of 1964, " may also contain ecological, geological, or other features of scientific, educational, scenic or historical value." Furthermore, the BLM Handbook H-6310-1 in section .2 (C) Other Resource Values and Uses , explains that the BLM must document how WSA designation would affect resource values other than recreation.The handbook goes on to explain how legislative history of The House Report (HR 94-1163) from the Interior and Insular Affairs Committee on FLMPA explains that other resource values such as watershed and water yield, wildlife habitat preservation, preserving natural plant communities and similar natural values should be considered as to how they

augment the multiple use management of adjacent or nearby lands (USDI 2001).

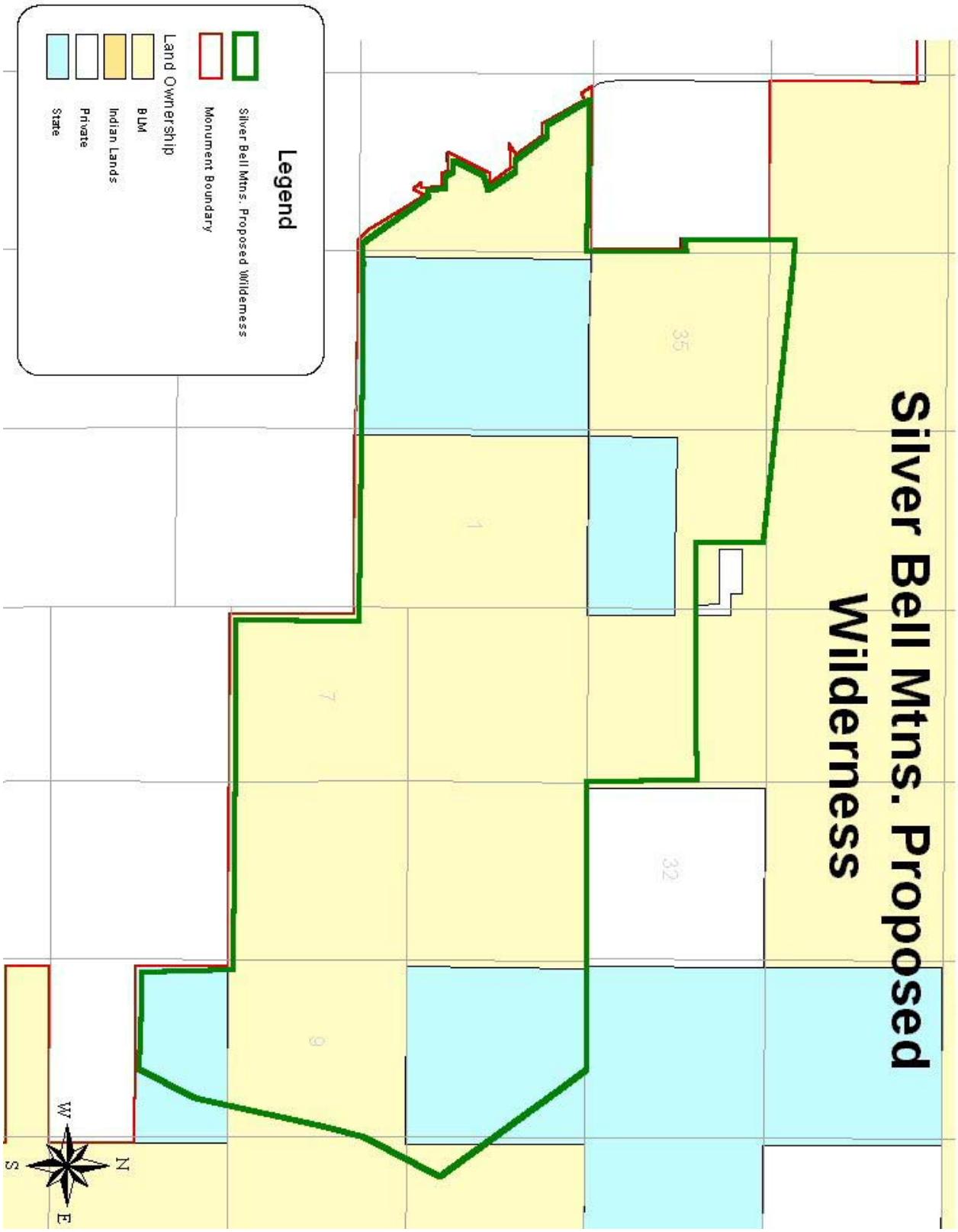
2.) There is no reference made to any wilderness precluding characteristics within the unit. Yet it seems as if the East Silver Bell Mountains were dropped from further study based upon lands that were not inside the inventory unit. Despite BLM's statement that human impacts outside the inventory will not "normally" be considered in assessing naturalness of an area, although the agency may evaluate such impacts for their "direct affects on the inventory area" (USDI 2001 [H-6310-1, Section .13(B)(2)(c)]). The Wilderness Act, and subsequent legislation such as the Eastern Areas Wilderness Act, generally prohibit outside "sights and sounds" from precluding wilderness designation (Scott 2001).

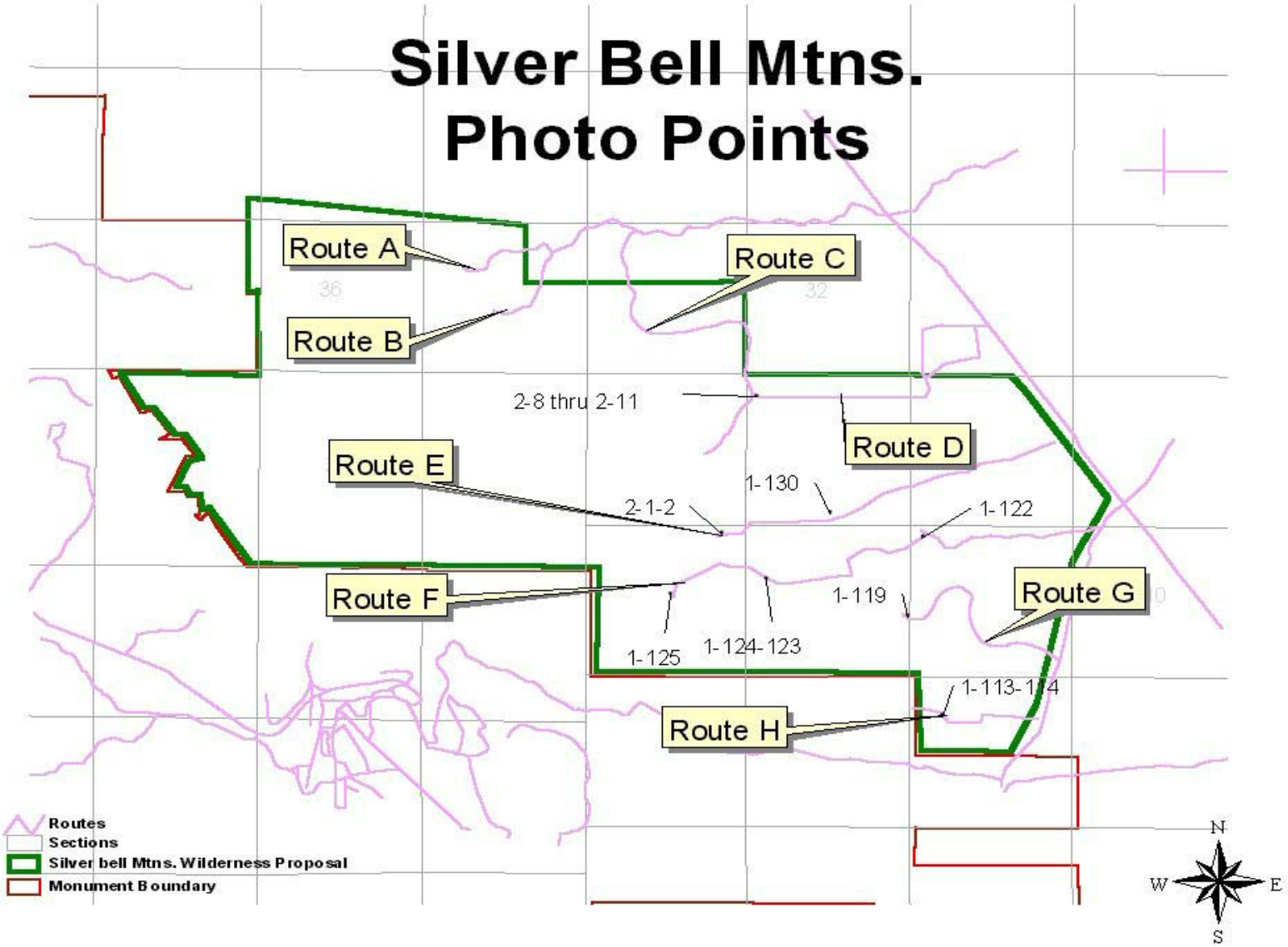
3.) Not only did the BLM evaluate the natural character of the unit based on impacts outside the inventory unit, but it gave no explanation as to how these impacts would affect the ability of a visitor to experience unconfined and primitive recreation. The BLM refers to "primitive and unconfined recreation" as "…those activities that provide dispersed, undeveloped recreation which do not require facilities or motorized equipment." In no way do unnatural areas outside the inventory unit affect the visitor's ability to participate in primitive and unconfined types of recreation.

This review provides a piece of the,"New Information" criterion as explained in the BLM H-6310-1 handbook section .06 (E)(b). The BLM must consider many aspects of new information, including but not limited to: monument designation, population expansion, Threatened and Endangered species, and changing recreational uses. In conclusion, the BLM must reconsider wilderness for the Silver Bell Mountains to evaluate the flaws that occurred in past inventories, as well as for the purposes of protecting valuable wildlands.

Conclusion

The Silver Bell Mountains proposed Wilderness Study Area represents wilderness on the edge. The Silver Bell mine, the city of Marana, and excessive Off Road Vehicle use all threaten the valuable wilderness characteristics of this area. The existence of bighorn sheep and many other threaten and unique plants and animals need the strong protection that wilderness provides for long term viability of all these objects of the Ironwood Forest National Monument.


Silver Bell Mtns. Proposed Wilderness
Legend
Silver Bell Mtns. Proposed Wilderness
Monument Boundary
Land Ownership
BLM
Indian Lands
Private
State
35
1
7
32
9
W
N
S
E


Silver Bell Mtns.
Photo Points
Route A
Route B
Route C
Route D
Route E
Route F
Route G
Route H
2-8 thru 2-11
1-130
2-1-2
1-122
1-119
1-125
1-124-123
1-113-114
Routes
Sections
Silver bell Mtns. Wilderness Proposal
Monument Boundary
N
W
E
S

1-113

1-114 Saguaro Shooting

1-119

1-122 Wildcat off of Route F

1-123

1-124

1-125

2-8

2-10

1-130

2-9

2-11

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Review of the Ecological Impacts of Roads

By: Kim Crumbo

According to the National Research Council (1997), there are approximately four million miles of roadway in the United States. While directly covering about one percent of the conterminous U.S., the negative ecological effects of the "road-effect" are greater, about 18-20 percent (Forman 2000). Other credible interpretations place road effects at about 94 percent, including some national parks (Soule 2000).

Studies demonstrate that higher occurrences of adverse ecological impacts increase with higher road densities. Concern over this ubiquitous encroachment produced a large body of scientific literature describing the negative biological effects of roads, including direct wildlife mortality, changed animal behavior, degraded habitat, habitat fragmentation, and the spread of exotic species (see Environmental Defense Fund 1995:53-54, 58).

Primitive Roads

Roads lead to extensive habitat destruction by providing access for numerous other activities, such as logging, mining, grazing, development, ORV joyriding and poaching of wildlife and archeological sites. Roads and habitat destruction form a positive feedback loop: once in place, roads lead to habitat destroying activities, which when exhausted require new roads to reach ever more remote areas to conduct the same activities (TWS). Roads provide excessive access to ATV's that too often create new, illegal tracks through sensitive habitats (Soule 2000), a process evident in the two Monuments as ORV damage extends beyond established travel ways. For example, citizen surveys discovered ATV off-route damage in the Park Service's proposed Grand Wash Cliffs (AWA's Snap Canyon) Wilderness (photos KC-47-7,24,25; KC-48-1,8), and within Paria Canyon-Vermilion Cliff Wilderness (photos KC-40-16; KC-45-17; KC-46-7,9,10,16; LB-2-1; LB-4-22).

The extensive literature on the importance of intact natural habitats makes a compelling case for the potential role of roadless areas as refugia for native biodiversity and as areas crucial to forest integrity and function

(Strittholt and DellaSala 2001:1751). Equally impressive is the mounting body of evidence showing the ecological cost of roads (Strittholt and DellaSala 2001:1751). Suggestions that research on the effects of roads on natural ecosystems is inconclusive (e.g., Heinz Center 1999) is largely unsupported by the literature (Strittholt and DellaSala 2001:1751).

Habitat Quality

Open-road density is a good predictor of habitat suitability for large mammals, with habitat effectiveness and population viability declining as road density increases (Noss and Cooperrider 1994). Because of changes to the environment and danger resulting from roads, many wildlife species have learned to partially or completely avoid roads. For example, grizzlies, elk, mountain lions, small rodents and likely many other animals all show partial or total aversion to roads, to the extent that they either will not cross roads at all, creating a complete dispersal barrier, or use roadside habitat less extensively, effectively reducing total habitat area (Garland and Bradley 1984, Kozel and Fleharty 1979, Lyon 1979, Mclellan and Shackleton 1988, Van Dyke et al. 1986, Wilkins 1982).

In fact, high road densities are a known cause of extirpation of wildlife species. For example, elimination of wolves in Northern Wisconsin by 1960 was correlated with a road density threshold of .94 miles per square mile (Thiel 1985). Similarly, habitat models for elk have shown that road densities higher than one mile per square mile reduces effective habitat to zero (Lyon 1979). In another study, mountain lions avoided improved dirt and hard-surfaced roads and selected home range areas with lower densities of these road types (Van Dyke, Brocke and Shaw 1986). Related studies demonstrated that lions on the Kaibab Plateau and southern Utah avoided logging areas and established home ranges in areas with lower road densities (Van Dyke et al. 1986b).

Fragmentation

The severity of habitat fragmentation precipitating extinction lead two prominent conservation biologists to conclude:

Habitat fragmentation is the most serious threat to biological diversity and is the primary cause of the present extinction crisis (Wilcox and Murphy 1983).

Roads, by destroying habitat and creating dispersal barriers, are a major anthropogenic cause of habitat fragmentation. This, along with wholesale conversion of habitat due to exotic plant invasion, is likely the most devastating impact of roads leading to extirpation or extinction for species that avoid or are unable to cross roads. For such species, a road effectively divides their population in two. More roads divides their population into ever smaller and more isolated groups, each one vulnerable to extinction from all the problems associated with small populations, such as inbreeding, demographic stochasticity (i.e. chance variation in age and sex ratios), environmental stochasticity and anthropogenic habitat loss (REFERENCE).

Larger patches of habitat support a wider spectrum of species, including those requiring large home ranges. They are more secure from human-induced effects and are possibly large enough to allow natural processes such as fire to operate without human interference (Stritholt and Dellasala 2001:1751). Even though roads occupy a small fraction of the landscape in terms of total area, their influence extends far beyond their immediate boundaries. Roads precipitate habitat fragmentation by dissecting otherwise large patches into smaller ones, and in so doing create edge habitat along both sides of the road, potentially at the expense of interior habitat (Trombulak and Frissell 2000; Reed et al.1996).

Roads directly eliminate wildlife habitat by occupying space within the ecosystem and by altering adjacent habitat; a 10 meter-wide road covers 10,000 square meters for every kilometer of its length and a much larger area is influenced by edge-effects (Schonewald-Cox and Buechner 1992). Roadside habitats experience increased temperature extremes and solar input, and pollution from exhaust, herbicides, garbage, dust and noise (Noss 1996, Schonewald-Cox and Buechner 1992, Van Dyke et al. 1986, Yahner 1988). This increases habitat disturbance by a minimum of 500-600 meters on either side of a small rural road and a much larger distance for highways (Van Der Zande et al. 1980). Any exclusion of roads from fragmentation assessments presents an incomplete picture of the effects of one of the

most predominate anthropogenic changes of North American forested ecosystems (Strittholt and Dellasala 2001:1751).

Poaching and Hunting

Roads result in frequent and often negative encounters between wildlife and humans (Buckley and Pannell 1990). Wildlife biologists have recognized problems with open roads that expose large mammals such as deer, pronghorn, cougar and bighorn sheep to heavy hunting pressure, poaching, and harassment (Davidson et al. 1996:110; Trombulak and Frissell 2000:24). Other studies indicate that habitats with low road density better protect species sensitive to legal or illegal hunting and persecution (Thiel 1985; Mech et al. 1988; Soule 2000).

Although less visible than habitat destruction, poaching is a serious threat to many wildlife species and would be next to impossible without roads. For example, illegal shooting was found to be the primary cause of death for two small populations of grizzlies in Montana over four years of study, resulting in mortality for five out of 19 radio-collared bears (Knick and Kasworm 1989). Species vulnerable to poaching found within the Arizona Strip include bighorn sheep, mule deer, mountain lions, desert tortoise, raptors and condors.

Interestingly, road closures may result in greater hunting success rates and perceived improved hunting quality (Lyon et al. 1985:7-9; Gratson and Whitman 2000: 308-309; McLaughlin et al. 1989). Increasing the amount of time hunters leave the vehicle and walk probably increases the number of animals seen and the likelihood of a kill (Lyon et al. 1985:7-9). Unroaded areas possibly attract higher-skilled hunters, contributing to greater hunting success (Gratson and Whitman 2000:308). Hunting management through road closures may be appealing to wildlife management agencies and the public because hunting opportunities remains relatively great compared to limiting numbers of hunters by controlled hunts or reducing season length (Gratson and Whitman 2000:309).

Exotic Plants

Roads, including primitive roads, create adverse impacts on natural resources. Possibly the most significant affect on arid and semi-arid biological communities relate to exotic plant invasions along road corridors (see Davidson et al. 1996:111). Disturbed surfaces provide ideal

habitat and avenues for exotic plants pathogens and pests to spread, possibly resulting in drastic habitat changes (Trombulak and Frissell 2000; Amor and Stevens 1976). For example, exotic plant species invaded logging roads in Montana forests at all elevations, and ultimately invaded adjacent ponderosa pine and grassland (Forcella and Harvey 1983). In another example, exotic annual plants invaded a pipeline corridor within a woodland, grassland and chaparral reserve in California and persisted as the dominant plants ten years after the disturbance (Zink, Heindl-Tenhunen and Allen 1995).

Exotic plants dominating huge expanses of western land compete with or displace native plants. Exotic plants provide poor habitat for native wildlife generally adapted to utilizing native flora. Regarding native biodiversity, the long-term implication of exotic plant invasion is ominous. For example, studies of Idaho shrub-steppe habitat shows that sites invaded by non-mycorrhizal exotic plants eliminated vesicular-arbuscular mycorrhizae up to ten years (Wicklow-Howard 1994). Without native mycorrhizal-dependent plants, the fungal propagules may not be able to survive, and as a result the reestablishment of native plants is expected to be difficult.

Scientists suggest that exotic weed invasion might be prevented by restricting access on existing roads (Davidson et al. 1996:112). Research also indicates that large roadless areas with low circumference-to-area ratios offer the best protection of arid and semi-arid ecosystems against wholesale conversion, and that maintaining their roadless character offers the most economical strategy for preventing the spread of introduced grasses to relatively undisturbed areas (see Davidson et al. 1996:112). Research also underscores the importance to manage roadless areas responsibly and restore them where necessary (Strittholt and Dellasala 2001; DellaSalla et al. 1999; Strittholt et al 1999).

Archaeological Impact

Obviously, roads inadvertently or deliberately constructed through archaeological sites severely impair cultural resources. For example, BLM Route 1100, a bladed road in the Vermilion Cliffs, has greatly exacerbated damage to the West Bench Pueblo (photo KC-28-24). Vehicular access provided by primitive roads also facilitates illegal excavation and collecting of archaeological resources. For

example, improvement in mine-related roads in the 1980s outside Grand Canyon National Park resulted in increased visitation to the Kanab Plateau and a corresponding increase in vandalism to cultural resources (Huffman 1993). "Inadvertent vandalism," through campsite proliferation and expansion, campfire ring construction, woodcutting, and off road travel comprises a serious threat to archaeological resources (Sullivan et al. in press; see Vermilion Cliffs photos CB-1-22, KC-41-5, LA-3-18, and LA-3-32).

Highway Mortality

Besides poaching, hundreds of thousands of animals are killed on our nations roads by cars every year. Bears, raptors, snakes, deer, small birds, small mammals are all victims of roadkill, resulting in significant population declines. For example, 146,229 white-tailed deer were killed on highways across the U.S. in 1974 and in Pennsylvania alone 26,180 deer and 90 bears were killed by cars in 1985 (Feldhamer et al. 1986). Noss (1996) reports that automobile impacts caused 65% of documented Florida panther mortality since 1972. Considering there are only 20 of these magnificent cats in the wild, road kill is a major threat to their long-term survival, as it is to many other species.

It is clear that roadways, especially if paved, substantially damage snake populations (Rosen and Lowe 1994:1). From the perspective of reptile conservation, heavily used roads, especially high-speed paved roads such as the proposed paved Toroweap road, are clearly inappropriate in designated natural areas such as reserves, parks, monuments, and wildlife refuges where species and ecosystem conservation is a priority (Rosen and Lowe 1994:5-6).

Soil Impacts

In the Southwest, roads and associated activities are the primary cause of extensive arroyo cutting during this century (see Bahre 1991). Vehicular traffic directly destroys biological resources by crushing vegetation and microbiotic crusts. The resulting soil compaction retards revegetation. In addition, adequate maintenance of primitive roads in remote locations imposes significant ecological as well as monetary costs. Poorly located or unmaintained roads often result in serious erosional problems (Moll 1996; Ketcheson and Megahan 1996). Severe gully formation negatively impacts soils, vegetation, and

archaeological resources. The most practical and economical long-term mitigation of these problems lies with closure and revegetation (Moll 1996).

Plant Poaching

Other undesirable consequences of road access include illegal collecting of rare plants and animals (Noss 1995).

Restoration

Vehicular traffic directly destroys biological resources by crushing vegetation and microbiotic crusts and retards revegetation through soil compaction. A review of the literature underscores the importance to conservation of not building new roads in roadless or sparsely roaded areas and of removal or restoration of exising roads to benefit native biota (Trombulak and Frissell 2000:18,26). Sections of the Monument's spectacular and biologically rich areas also contain a network of rough jeep trails that impact natural resources such as desert soils and vegetation, and probably adversely affect wildlife species such as big horn sheep and mountain lion. This problem will certainly accelerate should the area remain open to mechanized access. Closure and active restoration of impacted areas would greatly facilitate ecological recovery (see Stritholt and Dellasala 2001).

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