

Livestock Management Guidelines

Coronado National Memorial Cochise County Arizona March 2000

INTRODUCTION

The Coronado National Memorial (Memorial) Livestock Management Plan is intended to establish long and short-term strategies for the management of permitted (authorized) livestock operations. There are four separate albeit related parts to this document. The first part contains livestock management guidelines giving management goals, overview of past and future livestock management, legislation and policy, to include a summary of administrative procedures and sample special use permit. Section one contains management guidelines that either do not require public review or environmental assessment or, if so, are repeated and analyzed in part two. The second part is an environmental assessment of the future management of the two grazing allotments i.e., the Joe's Spring and Montezuma Allotments (Joe's Spring Allotment also includes an adjacent parcel of land administered by the U. S. Forest Service). The third and fourth parts are the proposed allotment management plans for the two allotments previously mentioned. Sections two through four satisfy the requirements of the National Environmental Policy Act.

This plan was developed by National Park Service (NPS) staff. Input and comments to the first draft were received from NPS staff at Coronado National Memorial, the Southern Arizona Office, and the Intermountain Regional Office, U. S. Forest Service staff at the Sierra Vista Ranger District, and other interested parties, including one permittee.

Each section was written to stand alone, although there is some degree of repetition between sections, and should provide the reader with all necessary information. The environmental assessment is not overly technical; however the livestock management guidelines and allotment management plans are technical in nature; the reader may want to consult other references to completely understand some of the terminology included. A table of contents is provided to help locate specific information.

Park Mission:

The Mission of Coronado National Memorial is to permanently commemorate the expedition of Francisco Vasquez de Coronado, and to protect the unique cultural and natural resources within Montezuma Canyon, Arizona.

Park Purpose:

- To interpret and symbolize the Coronado Entrada.
- To memorialize the ties that bind the U.S. to Mexico and Spain.
- To strengthen international amity and cultural understanding.
- To protect unique natural and cultural resources within the Memorial.

Park Significance:

- The Coronado Expedition was the first organized European expedition into what is now the American Southwest.

- Because of the proximity of the Memorial to the San Pedro River valley, the route Coronado is believed to have taken, its historical value lies in the reflective mood it sets for contemplation of his Entrada.
- The location of the Memorial on the U.S. Mexico border facilitates cultural understanding and international amity.
- The Memorial interprets impacts on indigenous peoples of the American Southwest due to the European Entrada.
- The Memorial protects unique cultural and natural resources specific to an area encompassing northern Chihuahuan Desert and Southeastern Arizona grassland habitats.

MANAGEMENT GOALS

Goals are based on the National Park Service's mandate to protect and preserve natural and cultural resources.

- Administer the livestock-grazing program to minimize the effects on natural processes and implement the best range management practices, with an emphasis on protecting sensitive species and sensitive resources.
- Administer grazing operations so that existing vegetative communities, with an emphasis on native desert grasslands, move towards the potential natural community (PNC). Design a grazing system that encourages natural vegetation succession and discourages non-native species, including noxious weeds.
- Maintain a high quality of air, water, geologic, soil and scenic resources.
- Take corrective action when range structures do not meet prescribed standards.
- Eliminate or restrict grazing, to the extent necessary, to protect endemic, threatened and endangered, and sensitive species, cultural resources, and recreational uses.
- Provide flexibility in the park grazing program in order to allow integration of other management agendas such as: recreational development, threatened and endangered species management, fire management, and visual resource management.
- Mitigate potential conflicts between the grazing program, other resource programs and operational needs of the permittee.
- Provide habitat for all endemic species of wildlife that typically inhabit southeastern Arizona.

MANAGEMENT OBJECTIVES

Objectives are derived from the goals to limit impacts related to grazing activities.

- Maintain or improve all plant communities through livestock distribution, use of grazing system that includes rest of pastures, and adjusting number of livestock to fit the carrying capacity of the allotment.
- Limit livestock utilization to no more than 40 percent, dry weight, of annual production by improving distribution or bringing stocking into balance with available resources.
- Improve all range structures to an approved standard by the year 2002.

- Input range data into computer databases and geographic information system.
- Establish plots and conduct vegetation sampling and grazing utilization analysis to document short and long-term effects of livestock use. Included here is the installation of small exclosures within the pastures. Integrate monitoring data from other resource management programs to make sound management decisions.
- Decrease erosion factors including the amount of bare ground present and increase production of native perennial plants.
- Continue to refine vegetation mapping and ecological assessment for areas within the allotments, especially riparian areas.

HISTORICAL AND CURRENT LIVESTOCK USE

Southeastern Arizona has had a long and varied cultural history. Several distinct historic and prehistoric cultures have inhabited the area. The Hohokam culture was predominate until about 1500 AD. Spanish settlement of the area began also around 1500 AD. Early Spanish settlement brought the introduction of livestock to the region. In the early 1800s, the Mexican government gave land grants to its privileged rich class throughout southern Arizona. Following the War with Mexico, Mexican jurisdiction of the area ended with the Gadsden Purchase in 1854. Completion of the Southern Pacific Railroad in the 1860s provided opportunities for expansion of cattle markets and increased the agricultural and mining possibilities. During the late 1800s, military posts were established. This resulted in extensive cattle ranching, farming and mining by 1885.

With their arrival in the 1500s, livestock made a significant impact on the natural landscape of southeastern Arizona, particularly during the late 1800s and early 1900s. Improper livestock management stripped grasslands of their vegetation, increased woody plant production, caused massive arroyo cutting, and facilitated soil erosion during the late 1800s and early 1900s (Hastings and Turner 1965). A major drought in the late 1800s reduced livestock numbers by 50 to 75 percent and contributed to the degradation of native vegetation. The Coronado National Forest was established in the early 1900s and provided the means for the first time to manage livestock usage of public lands. Allotments were established and fenced. Permits were generally issued to the ranchers who had traditionally used the areas. Coronado National Memorial was authorized in 1941 and established in 1952, and was created from U. S. Forest Service (USFS) lands. The 1941 legislation provided for the continuation of grazing within the Memorial boundaries "provided it did not interfere with recreational development."

Three allotments were present when the Memorial was established and a fourth was added as a result of a land exchange in 1978. The original three allotments include the Grubstake, Lone Mountain and Montezuma Allotments. Joe's Spring Allotment was added to the Memorial following the land exchange with the USFS. Grubstake and Lone Mountain Allotments were voluntarily retired by the permittee in 1989 due to the low benefit derived and conflicts of livestock interfering with the recreational pursuits of Memorial visitors. Only those portions of the Grubstake and Lone Mountain Allotments within the Memorial were retired. The portions outside the Memorial are still actively grazed and administered by the USFS. The

Joe's Spring Allotment is still actively used while the Montezuma Allotment has been inactive and in non-use since 1990.

Records of grazing on what would become Coronado National Memorial date back to 1929. Of the two active allotments, Joe's Spring has been grazed by the same family since 1936, whereas the Montezuma Allotment has been held by ten different permittees. Permittees have changed four times since 1980. Before 1992, grazing was administered by the USFS through a Memorandum of Understanding with the National Park Service. In 1992, the National Park Service began directly administering the grazing allotments. In 1999, an agreement was entered into between the NPS and the USFS to co-administer the Joe's Spring Allotment. The agreement states that the NPS will issue permits and billing statements; payments for grazing will be deposited proportionately into NPS and USFS accounts. Both agencies monitor vegetation and allotment condition on their respective portions of Joe's Spring Allotment.

FUTURE LIVESTOCK USE

The future of livestock use at Coronado National Memorial will be dependent on the recreational demands of user groups. The nearest urban areas are experiencing rapid population growth, as is most of southern Arizona. The population of Cochise County increased 30 percent between 1980 through 1995 (from 85,686 to 112,000). That trend is expected to continue in the future. As the local population increases, visitation to the Memorial will continue to increase. In the past decade visitation to the Memorial has also increased by about 30%.

As visitation increases, the National Park Service will need to monitor the compatibility of livestock grazing and recreational use more closely. The legislation that established Coronado National Memorial states that grazing could continue but only if it did not interfere with recreational development. Livestock grazing of the allotments on the western side of the Memorial (Grubstake and Lone Mountain) already has been eliminated, in part due to conflicts with recreational development and use. Cattle repeatedly interfered with hikers on nearby trails and visitors at the Montezuma Pass parking lot, requiring the rancher to remove cattle from the area continually. For these reasons, as well as the low benefit derived, in 1990 the rancher voluntarily agreed not to graze the NPS portion of the allotments.

The eastern side of the Memorial is closer to Sierra Vista and is more accessible to visitors arriving from that direction. The Memorial receives requests for additional hiking and bird watching opportunities on the desert grassland habitat that occurs only on the eastern side. Therefore, the NPS will undertake recreational planning in that portion of the Memorial that may include picnic areas, hiking and equestrian trails and rest rooms. This planning and development will occur over the next five to ten years. Recreation may displace livestock grazing from that portion of the Memorial.

LAWS AND POLICIES AFFECTING LIVESTOCK MANAGEMENT

The National Park Service's management of Coronado National Memorial is governed by the statutes and regulations applicable generally to units of the national park system and by the authorizing legislation specific to Coronado National Memorial, 16 U.S.C. §§ 450y through 450y—7 (1994). 16 U.S.C. §§ 450y—2 directs the Secretary of the Interior to permit "[g]razing of livestock within the memorial area to the extent now permitted within the said area when such grazing will not interfere with recreational development authorized by sections 450y to 450y—4 of the title." It should be noted that the regulations governing units of the national park system, found in 36 C.F.R. ch. I (1998), generally prohibit livestock use in units of the national park system, except as specifically authorized by Federal statutory law, as required under a reservation of use rights arising from acquisition of a tract of land, or as designated, when conducted as a necessary and integral part of a recreational activity within the national park system. 36 C.F.R. at subsection 2.60(a). Grazing in Coronado National Memorial is permitted under the authorizing legislation and the first exception in the regulation. It also should be noted that Congress repeatedly has directed the National Park Service to manage units of the national park system, including Coronado National Memorial, to a high standard of conservation and protection. For example, Congress has stated, "the authorization of activities and the protection, management, and administration of these areas shall be conducted in light of the high public value and integrity of the National Park System and shall not be exercised in derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided by Congress." 16 U.S.C. § 1a—1 (1994).

NPS Management Policies (1988) state "Livestock or trail stock will be kept within the carrying capacity of the area to be grazed so the composition, condition, and distribution of native plant and animal communities and ecosystem dynamics are not significantly altered...no facilities or range developments such as fences, corrals, or water developments, other than those authorized by law or approved for NPS use or concession use, will be allowed in parks to increase livestock numbers or to introduce livestock into areas where they cannot otherwise exist. The National Park Service will not expend funds to construct or maintain commercial livestock facilities unless there is a direct benefit to the protection of park resources. The grazing permittee will be required to remove such facilities when grazing activities are no longer authorized."

Further direction to the Management Policies is provided in NPS-77 Natural Resource Management Guideline (1991) and NPS-53 Special Park Uses Guideline (1998), which provide program guidance, identify resource objectives, and state the role and responsibilities of the NPS. For all parks with grazing, NPS-77 requires grazing management plans that reflect NPS management objectives. Park ecosystems are frequently unique or significantly different from those for which most grazing systems have been developed. Therefore, grazing plans designed for use in non-park areas may not be acceptable for use on NPS lands. For example, most grazing systems have been developed for multiple-use lands and, therefore, may place a greater emphasis on benefits for animal production than would be appropriate for park areas. NPS policy regarding special use permits and fees can be found in NPS-53 Special Park Uses

Guideline. NPS-53 contains detailed instructions pertaining to special park uses and permits procedures.

Other federal mandates directly or indirectly affecting grazing management and administration include:

- National Park Service Organic Act (39 Stat. 535; 16 USC 1-4)
- National Park Service Authorities Act (P.L. 94-458; 90 Stat. 1939; 16 USC 1a et seq.)
- National Environmental Policy Act (NEPA) of 1969 (P.L. 91-190) as amended.
- Endangered Species Act of 1973, as amended. (P.L. 93-205; 87 Stat. 884; 16 USC 1531-1543)
- Water Quality Improvement Act of 1970
- Federal Water Pollution Act (Clean Water Act of 1972) (P.L. 93-500; 33 USC 1251 et seq. [as amended, 1982, 33 USC sec.1251 - 1376, and 1987, Federal Water Quality Control Act, P.L. 100-4])
- Clean Air Act (42 USC 7401 et seq.)
- National Historic Preservation Act, as amended (P.L. 89-655; 80 Stat. 915)
- Taylor Grazing Act of 1934 (43 USC 315, et seq.)

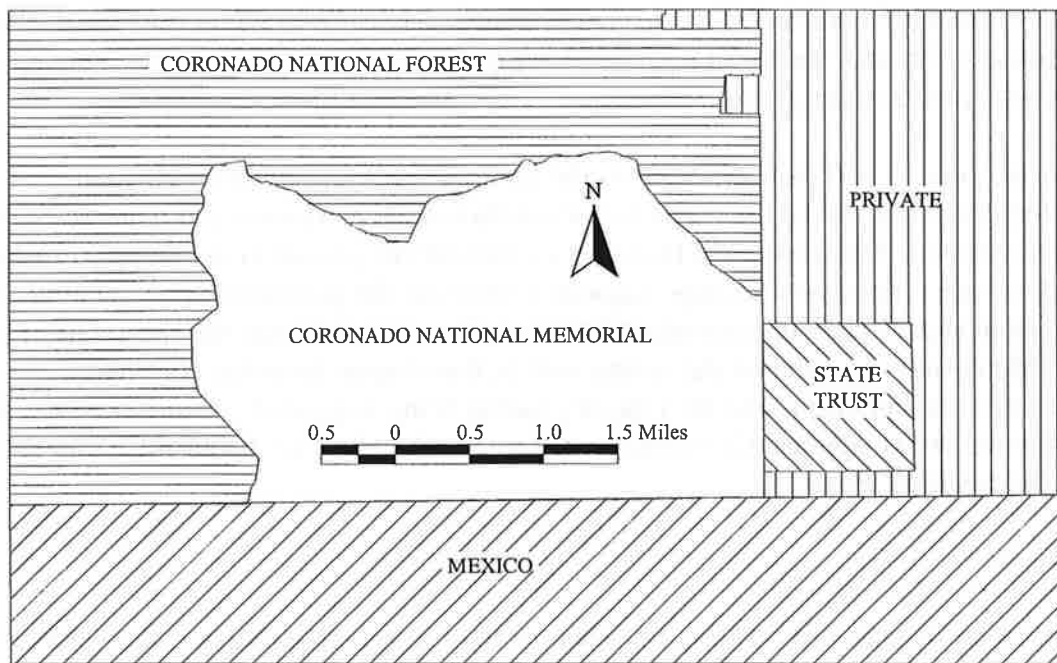


Figure I-1. Land ownership adjacent to Coronado National Memorial, Cochise County, Arizona.

ADJOINING FEDERAL AND STATE AGENCIES

The primary adjoining agency affected by grazing management at Coronado National Memorial is the USFS (Figure I-1); a portion (337 acres) of the Joe's Spring Allotment is located on the Coronado National Forest. Through an agreement between NPS and the USFS, the entire allotment is managed under this LMP. That portion of the allotment on USFS land

is administered by the NPS in cooperation with the USFS. The USFS parcel is covered under the Environmental Assessment (Section II) and Joe's Spring Allotment Management Plan (Section III).

The USFS managed both Montezuma and Joe's Spring Allotments from the time that the Memorial was established until the NPS began managing the allotments in 1992. The Memorial is also bordered on the east by Arizona State School trust land. This section of land is administered by the Arizona State Land Department, which is not involved with grazing on the Memorial. The permittee of the Montezuma Allotment currently holds the grazing permit for the adjoining state parcel.

ADMINISTRATIVE GUIDELINES

Permits

Where grazing is authorized, grazing permits are issued under by 36 CFR 1.6. A determination is made by the superintendent as to when conflicting uses require changes in the permit. The permit must comply with NPS-53 and NPS-77, the Special Use Guideline and the Natural Resource Management Guideline, respectively. The special use permit for livestock use at Coronado National Memorial is shown in Appendix I-3. Included within it are specific guidelines for grazing management.

In most cases, permits will be transferred to the previous year's permittee. However, unsatisfactory performance by the permittee or conflicts with recreation and other resource uses, may require the Superintendent to cancel or transfer the permit to another party. In case of changes in base property ownership, requests to transfer the permit must be made in writing to the superintendent. The Superintendent is responsible for approving the special use permit within the Memorial. Transfer of the permit will be based upon resource conflicts, qualifications of the applicant, and the type of grazing being requested. Transfer of the permit will also depend on the applicant's willingness to follow the plans set forth in the current allotment management plan.

Fees

NPS-53, Chapter 6 states that "The fair market value of a special park use is the value of the lands or facilities used and the NPS costs incurred in managing, facilitating or supporting that use. The NPS is authorized to recover fair market value of special park uses through appropriate permit fees. The NPS may recover and retain as reimbursable income, that portion of the permit fee that represents its costs.

"The authority for the NPS to recover and retain costs associated with managing special park uses is found at 16 USC sec. 3a. Charges established for a special park use under this authority are intended to recover costs associated with managing that activity and not to generate revenue beyond actual cost.

"In addition to 3a, the NPS is responsible for carrying out the provisions of 31 USC 9701, the general authority of the Federal government to impose user charges. 31 USC 9701 provides that such charges will be assessed against each identifiable recipient for special benefits derived from federally permitted activities beyond those received by the public. OMB Circular A-25 provides implementation guidance for all administrative agencies of the U.S. government. Further guidance for the NPS is found in the Department of the Interior Departmental Manual (DM), Part 346 (Cost Recovery). This authority directs the NPS to impose a user charge for the value of the facilities or lands used, or the services provided."

NPS-53 defines four categories of fees that may be assessed for special park uses, such as grazing. These are land use, management, application and administrative fees. Fees shall be charged for all costs to the government related to livestock grazing in Coronado National Memorial. Grazing fees will be charged to the permittee following the USFS formula found in 36 CFR 222.51. The permittee may request a refund or credit for unused animal unit months and it may be granted at the discretion of the superintendent. This request must be in writing to the superintendent. For grazing fees, the fee year will be October 1 through the following September, hereafter referred to as the fiscal year or FY. Grazing fees will not be assessed during non-use years.

If the comprehensive allotment-monitoring program is adopted as described in the proposed alternative of the environmental assessment, an additional fee, estimated at \$1000.00 per allotment, will be assessed annually to offset costs to the NPS for implementing vegetation monitoring. These fees are authorized under 16 USC sec. 3a and are due and payable as listed above. It is estimated that monitoring of each allotment will require the equivalent of 10 person-days per year, at a cost of \$100.00 per person-day. This fee will be waived during periods of non-use. The actual cost of monitoring will be assessed to the permittee in the following year. For example, if monitoring costs in FY 2001 are \$850.00, the permittee will be assessed \$850.00 when the permit costs for FY 2002 are billed. The NPS will begin assessing this fee after October 1, 2001 (fiscal year 2002); thus, the permittee will be billed for these costs when the bill for collection is presented for FY 2002.

An application fee of \$50.00 will be assessed annually for the grazing permit. This fee is authorized by 16 USC sec. 3a. The effort needed to process the grazing permit is estimated to be at least 0.5 person days at an average cost of \$100.00 per person day. This fee will be due and payable when the request to issue the permit is received, beginning at the time the permit is requested for FY 2001. Application fees will be assessed only during periods of use and not assessed during periods of non-use.

Additional expenses incurred by the NPS (administration costs) will be assessed based on actual costs. The billing procedure will be as described above for monitoring expenses. This will include park staff time related to administering the permit, such as checking fences and water developments, and monitoring livestock, estimated at five person-days. These fees will not be assessed during periods of non-use. At this time no fees will be charged to complete NEPA compliance, however, future compliance costs associated with grazing will be passed on to the user.

The permittee will deposit payment for grazing fees with the designated National Park Service collection officer no later than the date specified in the bill for collection. The NPS will not allow livestock grazing until the permit is validated by fee payment specified in the bill for collection.

Forage Utilization

Utilization of forage by livestock should be kept below 40 percent in all habitats, especially riparian. Holechek (1988) recommends utilization levels of 30-40 percent in semi-desert grasslands and oak woodlands, the general vegetation zones that exist within the allotments at Coronado National Memorial. This can be accomplished through adjustments in number of livestock allowed to graze and by adjusting the length of the grazing season. Flexibility in the grazing schedule will be critical to avoid over-utilization. Pastures should be checked regularly to prevent over-utilization.

Stocking Rate

Stocking rate is the number of specific kinds and classes of animals using a unit of land for a specific period. At Coronado National Memorial stocking rates will be based on recommended stocking rates found in the ecological site (range site) guides produced by the Natural Resource Conservation Service. Adjustments are made for seral stage, site type and slope. The emphasis will be to use the allotments moderately in order to reduce the long-term impacts. Vegetation trend will be monitored to determine if stocking rates are acceptable and not over-utilizing the available forage.

Season of Use

The proposed season of livestock use for Coronado National Memorial will be from 15 October through 15 March. This period is proposed to avoid grazing during the primary vegetative growing season. However, due to the erratic nature of precipitation in this region, actual dates for turnout and gathering of livestock may vary year to year.

Allotment monitoring will determine if the pasture is in suitable condition for grazing to begin. Suitable condition may be defined as average or greater production of grasses and forbs during periods of average or greater annual precipitation. Criteria for postponing grazing will include 1) drought conditions, 2) recent wildland fires, 3) presence of threatened or endangered wildlife or plant species, or critical habitat for these species, that will be harmed from competition with livestock for resources or space and 4) management or research activities that will be compromised by livestock. Season of use should also be concluded when utilization levels reach 40 percent as determined by utilization monitoring.

Trespass Livestock

Regulations and guidelines for trespass livestock are provided in 36 CFR 2.60 and NPS-77 Natural Resource Management Guideline. The regulations state that grazing related activities are prohibited unless authorized by law, as a reserved use in land acquisition, or as part of the park significance and/or historic scene. Trespass livestock may be impounded by the superintendent and disposed of within five days if the owner is known or 15 days if the owner is unknown.

Range Developments

The special use permit (Appendix I-3) includes specifications and procedures for range developments. In general, no new range developments will be allowed on the Memorial. All developments are the responsibility of the permittee to construct and maintain. New developments, if any, must be approved in writing by the superintendent.

Vegetation Monitoring Program

The Memorial is implementing a vegetation-monitoring program to establish the impacts of grazing in the allotments. Plant composition, plant frequency, forage utilization and trend will be monitored by NPS staff or professional range scientist.

Vegetation monitoring will consist of pre-grazing season plant sampling, inspection of the pasture during the grazing season, and plant utilization sampling after livestock are removed.

Prior to the grazing period (in September), park staff will conduct vegetation analysis consisting of quadrat sampling for plant frequency, species composition by the dry-weight rank method, density of special interest species with sampling by belt transects and reading photo-trend plots. Exclosures were installed and will be sampled with paired plots (grazed and ungrazed). During the grazing season the allotment will be inspected monthly by ocular estimates using the Grazed-Class Method (Schmutz 1978) for utilization sampling. If deemed necessary, utilization measurements will be taken. Vegetation utilization should not be allowed to exceed 40 percent on key species. Key species will be selected through field reconnaissance and sampling and may include grama species (*Bouteloua* spp.), plains lovegrass (*Eragrostis intermedia*), tanglehead (*Heteropogon contortus*), cane beardgrass (*Bothriochloa barbinodis*), and/or Texas bluestem (*Schizachyrium cirratum*). Sampling sites will be chosen to include the major vegetation types present and key riparian areas.

Records Management

Records will be maintained by the Memorial with copies sent to the Coronado National Forest and the permittee. Records will include correspondence, fees assessed and paid, permits, actual use forms, maintenance records and vegetation monitoring data.

LITERATURE CITED

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APPENDIX I-1. Coronado National Memorial Enabling Legislation.

Nov. 8, 1952, Proclamation No. 2995, 17 F.R. 10157, 67 Stat. C18.

ESTABLISHMENT OF THE CORONADO NATIONAL MEMORIAL, ARIZONA

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

A PROCLAMATION

WHEREAS section 1 of the act of August 18, 1941, 55 Stat. 630 (16 U. S. C. 450y), as amended by Public Law 478, 82nd Congress, approved July 9, 1952, provides that for the purpose of permanently commemorating the explorations of Francisco Vasquez de Coronado the President of the United States may declare, by proclamation, any lands within the area therein described to be established as the Coronado National Memorial; and

WHEREAS it appears that the public interest would be promoted by the establishment of the said Memorial on certain of the said lands as hereinafter provided:

NOW, THEREFORE, I HARRY S. TRUMAN, President of the United States of America, under and by virtue of the authority vested in me by section 1 of the said act of August 18, 1941, as amended, do proclaim and declare that, subject to all valid existing rights, the following-described public lands in the State of Arizona are hereby established as the Coronado National Memorial:

GILA AND SALT RIVER MERIDIAN

T. 24S., R. 20 E.,

sec. 10, S $\frac{1}{2}$ SW $\frac{1}{4}$, S $\frac{1}{2}$ SE $\frac{1}{4}$;

sec. 11, S $\frac{1}{2}$ SW $\frac{1}{4}$;

sec. 13, SW $\frac{1}{4}$ NW $\frac{1}{4}$, S $\frac{1}{2}$

sec. 14, NW $\frac{1}{4}$, S $\frac{1}{2}$, NW $\frac{1}{4}$ NE $\frac{1}{4}$, S $\frac{1}{2}$ NE $\frac{1}{4}$;

sec. 15, all;

sec. 22, all;

sec. 23, all;

sec. 24, all;

T. 24 S., R. 21 E.,

sec. 17 lots 5 and 6;

sec. 18, lots 3, 4, 8, 9, 10 and SE $\frac{1}{4}$ SW $\frac{1}{4}$;

sec. 19, all;

sec. 20, lots 3 and 4.

The areas described aggregate approximately 2,745.33 acres.

Warning is hereby expressly given to all unauthorized persons not to appropriate, injure, destroy, deface, or remove any feature of this Memorial or to settle upon any of the lands thereof as hereby established.

APPENDIX I-1 (cont.). Coronado National Memorial Enabling Legislation.

Subject to the provisions of the said act of August 18, 1941, the Director of the National Park Service, under the direction of the Secretary of the Interior, shall have the supervision, management, and control of the lands constituting the Coronado National Memorial in accordance with the act entitled "An Act to establish a National Park Service, and for other purposes", approved August 25, 1916 (39 Stat. 535; 16 U. S. C. 1-3), and acts supplementary thereto or amendatory thereof so far as the provisions of such acts may be applicable.

IN WITNESS WHEREOF, I have hereunto set my hand and caused the Seal of the United States of America to be affixed.

DONE at the City of Washington this fifth day of November in the year of our Lord nineteen hundred and fifty-two, and of the Independence of the United States of America the one hundred and seventy-seventh.

HARRY S. TRUMAN

By the President:

DAVID BRUCE

Acting Secretary of State

APPENDIX I-1 (cont.). Coronado National Memorial Enabling Legislation.

Aug. 18, 1941, ch. 365, Sec. 1, 55 Stat. 630

July 9, 1952, ch. 610, Sec. 1, 2, 66 Stat. 510

16 USC Sec. 450y Coronado National Memorial; establishment

For the purpose of permanently commemorating the explorations of Francisco Vázquez de Coronado, the President of the United States is authorized to declare, by proclamation, any lands within the following-described area, subject to all valid existing rights, to be established as the "Coronado National Memorial": Gila and Salt River meridian: Township 24 south, range 20 east, section 10, south half southwest quarter, south half southeast quarter; section 11, south half southwest quarter; section 13, southwest quarter northwest quarter, south half; section 14, northwest quarter, south half, northwest quarter northeast quarter, south half northeast quarter; section 15, all; section 22, all; section 23, all; section 24, all; township 24 south, range 21 east, section 17, south half southwest quarter; section 18, southwest quarter, south half southeast quarter; section 19, all; section 20, lots 3 and 4; aggregating approximately two thousand eight hundred and eighty acres.

AMENDMENTS

1952 - Act July 9, 1952, changed "Coronado International Memorial" to "Coronado National Memorial", and struck out proviso which required action of Mexican Government prior to establishment of the Memorial.

Aug. 18, 1941, ch. 365, Sec. 2, 55 Stat. 630

July 9, 1952, ch. 610, Sec. 1, 66 Stat. 510

16 USC Sec. 450y-1 Administration

The National Park Service, under the direction of the Secretary of the Interior, shall promote and regulate the use of the Coronado National Memorial for the benefit and enjoyment of the people of the United States. Insofar as applicable and not in conflict with sections 450y to 450y-4 of this title, sections 1, 2, 3, and 4 of this title, as amended and supplemented, providing for the establishment of a National Park Service, shall govern the promotion and regulation of the designated memorial area: *Provided*, That nothing in sections 450y to 450y-4 of this title shall be construed to authorize any recreational or other development by the National Park Service within the sixty-foot strip north of the international boundary between the United States and Mexico withdrawn by proclamation of the President dated May 27, 1907 (35 Stat., part II, p. 2136), unless such development has received the prior approval of the Secretary of State.

AMENDMENTS

1952 - Act July 9, 1952, changed "Coronado International Memorial" to "Coronado National Memorial".

APPENDIX I-1 (cont.). Coronado National Memorial Enabling Legislation.

Aug. 18, 1941, ch. 365, Sec. 3, 55 Stat. 631

Pub. L. 94-429, Sec. 3(f), Sept. 28, 1976, 90 Stat. 1342

16 USC Sec. 450y-2 Grazing within memorial area

The Secretary of the Interior, under such regulations as shall be prescribed by him, which regulations shall be substantially similar to those now in effect, shall permit - Grazing of livestock within the memorial area to the extent now permitted within the said area when such grazing will not interfere with recreational development authorized by sections 450y to 450y-4 of this title.

AMENDMENTS

1976 - Pub. L. 94-429 struck out designation "(a)" before "grazing of livestock" and struck out subsec. (b) which related to the surface use of the land within the memorial area for prospecting and mining.

Aug. 18, 1941, ch. 365, Sec. 4, 55 Stat. 631.

16 USC Sec. 450y-3 Construction of fences, roads, etc.

In the administration of the memorial area the Secretary shall not permit the construction of fences except (a) along the international boundary, (b) beside memorial roads or approach roads, and (c) around memorial areas within which improvements have been located by the National Park Service: *Provided*, That any roads constructed within the memorial area by the National Park Service shall include necessary cattle underpasses properly located for the passage of cattle across such roads: *And provided further*, That the right to the exclusive beneficial consumptive use for stock watering purposes of any water heretofore developed or used for such purposes within the memorial area shall remain in the present holders thereof, their heirs, assigns, successors, and administrators, so long as such water continues to be used exclusively for such purposes: *And provided further*, That nothing in sections 450y to 450y-4 of this title shall be construed to alter or affect any water right in the State of Arizona or the jurisdiction of said State over its waters: *And provided further*, That neither roads nor public campgrounds shall be constructed by the National Park Service within the south half southwest quarter of said section 10.

Aug. 18, 1941, ch. 365, Sec. 5, 55 Stat. 631

16 USC Sec. 450y-4. Acquisition of property; donations

Upon submission of title satisfactory to him, the Secretary of the Interior, on behalf of the United States, may accept lands and interests in lands which are within the memorial area but are not in Federal ownership and which are offered to the United States without cost.

APPENDIX I-1 (cont.). Coronado National Memorial Enabling Legislation.

Pub. L. 86-689, Sec. 1, Sept. 2, 1960, 74 Stat. 736

16 USC Sec. 450y-5. Revision of boundaries

In furtherance of the purposes of sections 450y to 450y-4 of this title and to facilitate the administration and development of the Coronado National Memorial, Arizona, the boundaries thereof are revised by the following additions and deletions of land:

- (1) Inclusion in the memorial and exclusion from the Coronado National Forest of lots 2 and 7 and a portion of Homestead Entry Survey 310 situated in section 18, township 24 south, range 21 east, Gila and Salt River base and meridian, said portion of Homestead Entry Survey 310 being more particularly described as follows: Beginning at the southwest corner (identified as corner number 1), of Homestead Entry Survey 310, said point being located on the present boundary of Coronado National Memorial and marked by an iron pipe with a brass cap and a rock cairn placed by the United States Bureau of Land Management in 1955; thence north zero degrees thirty-three minutes west, one thousand two hundred ninety-four and twenty-six hundredths feet, more or less, along the west boundary of said tract, which line is also the present boundary of said memorial, to the northeast corner of lot 8, section 18, said point being marked by an iron pipe with a brass cap and a rock cairn placed by the United States Bureau of Land Management in 1955; thence north zero degrees twenty-three minutes east, two hundred thirty and eight-tenths feet, more or less, along the west boundary of Homestead Entry Survey 310 to a point on a circular curve marked by an iron pipe with a National Park Service brass cap, said point being located south eighty-one degrees forty-four minutes east, exactly one hundred forty feet from the point of curvature of said curve; thence southeasterly five hundred forty-eight and two-tenths feet along said circular curve to the right of radius one thousand seven hundred thirty-two and four-tenths feet and having a beginning tangent bearing of south eighty-four degrees three minutes east (from point of curvature to point of intersection), to the point of tangency of said curve; thence south sixty-one degrees sixteen minutes east, two hundred twenty-four and eight-tenths feet to the point of curvature of a circular curve to the right; thence southeasterly two hundred ninety-two and six-tenths feet along said circular curve to the right of radius six thousand twenty-nine and six-tenths feet to the point of tangency of said curve; thence south fifty-eight degrees twenty-nine minutes east, five hundred eighty-eight and seven-tenths feet to the point of curvature of a circular curve to the right; thence southeasterly two hundred twenty-five and nine-tenths feet along said circular curve to the right of radius two thousand two hundred nine and nine-tenths feet to the point of tangency of said curve; thence south fifty-two degrees thirty-eight minutes east, twenty-eight and eight-tenths feet to the point of curvature of a circular curve to the left; thence southeasterly two hundred sixteen and nine-tenths feet along said circular curve to the left of radius one thousand six hundred nine and nine-tenths feet to the point of tangency of said curve; thence south sixty degrees twenty-one minutes east, thirty and seven-tenths feet to the point of curvature of a circular curve to the right; thence southeasterly seven hundred thirteen and six-tenths feet, more or less, along said circular curve to the right of radius one thousand two hundred fifty-four and nine-tenths feet to a point on the southern

APPENDIX I-1 (cont.). Coronado National Memorial Enabling Legislation.

boundary line of Homestead Entry Survey 310 marked by an iron pipe with a National Park Service brass cap, said point also being located on the present northern boundary line of Coronado National Memorial; thence north eighty-nine degrees forty-nine minutes west two thousand three hundred and sixty-one feet, more or less, along the southern boundary line of Homestead Entry Survey 310, which line is also the present northern boundary of the said memorial, to the point of beginning (all bearings referred to the true meridian).

(2) Inclusion in the Memorial and exclusion from the Coronado National Forest of lots 5 and 6 in section 20, township 24 south, range 21 east, Gila and Salt River base and meridian.

(3) Exclusion from the Memorial and inclusion in the Coronado National Forest of the north half southwest quarter northwest quarter section 13, and the north half southeast quarter northeast quarter section 14, all in township 24 south, range 20 east, Gila and Salt River base and meridian.

Pub. L. 86-689, Sec. 2, Sept. 2, 1960, 74 Stat. 737

16 USC Sec. 450y-6. Acquisition of lands; administration

The Secretary of the Interior is authorized to acquire lands and interests in lands within the revised boundaries of the Coronado National Memorial by purchase, donation, with donated funds, or by such other means as he may consider to be in the public interest. Lands and interests in lands acquired pursuant to this Act shall become a part of the Memorial and be administered by the Secretary of the Interior in accordance with the provisions of sections 1, 2, 3, and 4 of this title, as amended, and pursuant to sections 450y-1 to 450y-3 of this title.

REFERENCES IN TEXT

This Act, referred to in text, means Pub. L. 86-689 which enacted sections 450y-5 to 450y-7 of this title, and amended section 17j-2 of this title. Pub. L. 86-689, Sec. 3, Subsec. (a), Sept. 2, 1960, 74 Stat. 737, authorized appropriations for the repair and maintenance of the class "C" road lying between the terminus of F.A. 383 at the east boundary of Coronado National Forest and the point where said class "C" road enters Coronado National Memorial in the vicinity of Montezuma Pass, approximately 5.3 miles.

Pub. L. 86-689, Sec. 4, Sept. 2, 1960, 74 Stat. 737.

16 USC Sec. 450y-7. Authorization of appropriations

There is authorized to be appropriated the sum of not to exceed \$3,000 for the purpose of acquiring lands, interests in lands, and improvements thereon as may be necessary for carrying out this Act.

REFERENCES IN TEXT

This Act, referred to in text, means Pub. L. 86-689, which enacted sections 450y-5 to 450y-7 of this title, and amended section 17j-2 of this title. For complete classification of this Act to the Code, see Tables.

APPENDIX I-1 (cont.). Coronado National Memorial Enabling Legislation.

Public Law 95-625 [S. 791]; Nov. 10, 1978, 92 Stat. 3467

(16 USC 1 note)

NATIONAL PARKS AND RECREATION ACT OF 1978

Title I – Development Ceiling Increases

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Title II – Acquisition Ceiling Increases

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Title III – Boundary Changes

Revision of Boundaries

Sec. 301. The boundaries of the following units of the National Park System are revised as follows, and there are authorized to be appropriated such sums as may be necessary, but not exceed the amounts specified in the following paragraphs for acquisitions of lands and interests in lands within areas added by reason of such revisions:

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(4) Coronado National Memorial, Arizona: To add approximately three thousand and forty acres and delete approximately twelve hundred acres as generally depicted on the map entitled "Land Status Map 01, Coronado National Memorial, Cochise County, Arizona", numbered 8630/80,001, and dated October 1977: \$1,410,000.

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APPENDIX I-1 (cont.). Coronado National Memorial Enabling Legislation.

Federal Register / Vol. 47, No. 195 / Thursday, October 7, 1982 / Notices 44441

DEPARTMENT OF THE INTERIOR**National Park Service****DEPARTMENT OF AGRICULTURE****Office of the Secretary****Boundary Adjustments of the Coronado National Memorial and the Coronado National Forest**

By virtue of Section 301(4) and Section 302 of the Act of November 10, 1978, Pub. L. 95-625, 92 Stat. 3467, and with approval of the Secretary of Agriculture and the Secretary of the Interior, the lands hereinafter generally described are hereby transferred from the Coronado National Forest to the Coronado National Memorial, effective on the date of this publication; and the boundaries of the National Park System and National Forest System lands are hereby adjusted accordingly. These transferred lands are more particularly described and shown on map No. FPS-1. (Map filed as part of original document.) Copies of which may be examined at the Office of the Coronado National Forest, Sierra Vista Ranger District, Highway 90 Bypass, Milepost 321, Sierra Vista, Arizona, or at the Coronado National Memorial, 22 miles south of Sierra Vista, Arizona.

The area transferred from the Coronado National Forest to the Coronado National Memorial, Gila and Salt River Base and Meridian, Cochise County, Arizona, is described as:

That portion of Section 2, 11, 12, 13, and 14, T.24S., R.20E. and Section 5, 6, 7, 8, 17, 18, and 20, T.24S., R.21E., Gila and Salt River Base and Meridian, in less, including approximately 560 acres of private land, and as shown on map numbered FPS-1.

The area transferred from the Coronado National Memorial to the Coronado National Forest, Gila and Salt River Base and Meridian, Cochise County, Arizona, is described as:

That portion of the Sections 10, 11, 14, 15, 22, and 23, T.24S., R.20E., Gila and Salt River Base and Meridian, in Cochise County, Arizona, containing 1,200 acres, more or less, and as shown on the map numbered FPS-1.

For further information contact: Willis Kriz; Chief, Land Acquisition Division, National Park Service, Washington, DC (202-523-5252).

Dated this 1st day of February, 1982.

James G. Watt,
Secretary of the Interior.

Accepted by:

John R. Block,
Secretary of Agriculture.

APPENDIX I-2. United States Code 16 USC sec. 3 (a).**§ 3a. Recovery of costs associated with special use permits.**

Notwithstanding any other provision of law, the National Park Service may on and after November 11, 1993, recover all costs of providing necessary services associated with special use permits, such reimbursements to be credited to the appropriation current at that time.

SOURCE

(Pub. L. 103-138, title I, Nov. 11, 1993, 107 Stat. 1387.)

PRIOR PROVISIONS

Provisions similar to those in this section were contained in the following prior appropriation acts:

Pub. L. 102-381, title I, Oct. 5, 1992, 106 Stat. 1384.
Pub. L. 102-154, title I, Nov. 13, 1991, 105 Stat. 999.
Pub. L. 101-512, title I, Nov. 5, 1990, 104 Stat. 1923.
Pub. L. 101-121, title I, Oct. 23, 1989, 103 Stat. 709.
Pub. L. 100-446, title I, Sept. 27, 1988, 102 Stat. 1788.
Pub. L. 100-202, Sec. 101(g) (title I), Dec. 22, 1987, 101 Stat. 1329-213, 1329-223.
Pub. L. 99-500, Sec. 101(h) (title I), Oct. 18, 1986, 100 Stat. 1783-242, 1783-251,
and Pub. L. 99-591, Sec. 101(h) (title I), Oct. 30, 1986, 100 Stat. 3341-242, 3341-251.

APPENDIX I-3. Special Use Permit.**PART I. ANNUAL OPERATING PLAN**

Your grazing instructions for October 15, 20__ to March 15, 20__ are shown below. Follow them closely as they supplement management direction provided in your allotment management plan.

Number and Season of Use Permitted:

<u>Allotment</u>	<u>Livestock Number</u>	<u>Season of Use</u>	<u>AUM</u>
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Contact Coronado National Memorial headquarters if you anticipate any changes in livestock numbers or dates as soon as you become aware of them.

PART II. GENERAL MANAGEMENT PRACTICES**A. General Instructions**

Follow the instructions shown in the allotment management plan and all parts of your grazing permit.

B. Entry and Departure

Contact the superintendent five days before placing livestock on the Memorial and five days prior to departure to allow NPS staff to schedule time for counting livestock. If NPS is unable to count them, the permittee will count them and record the numbers and on/off dates on the actual use forms provided.

C. Schedules

Grazing and billing schedules will begin on October 1 and end on September 30 of the following calendar year, hereafter referred to as fiscal year.

PART III. PERMIT PROVISIONS

The following provisions apply to lands administered for grazing in Coronado National Memorial.

A. Fees Assessed

1. Grazing Fee

A grazing fee will be charged to the permittee following the USFS formula found in 36 CFR 222.51. Collection of grazing fees is authorized by 31 USC sec. 9701 and 16 USC sec. 450y-2.

2. Application Fee

An application fee of \$50.00 will be charged to offset the cost to the government for processing the grazing permit. This fee is authorized by 16 USC sec. 3 (a).

3. Administrative Fee

Additional expenses incurred by the NPS (administration costs) will be assessed based on actual costs. This includes, but is not limited to, time billed for monitoring fences, water developments and cattle. These fees are authorized under 16 USC sec. 3 (a).

4. Monitoring Fee

An additional fee, estimated at \$1000.00, will be assessed annually to offset costs to the NPS for allotment vegetation monitoring. These fees are authorized under 16 USC sec. 3 (a).

B. Bill for Collection

Each year prior to the beginning of the grazing season, the superintendent of Coronado National Memorial will send the permittee a bill for collection specifying the grazing allotment and current year, the kind, number, and class of animals allowed to graze, and the estimated period of use and grazing fees for the next season. Additional fees for monitoring and administration will be included as incurred in the previous fiscal year. This bill, when paid, becomes part of this permit. The bill for collection will be issued only during periods of actual use, not during years when pastures are rested.

C. Fee Payment

The permittee will deposit payment for grazing fees with the designated National Park Service collection officer no later than the date specified in the bill for collection. The

NPS will not allow livestock grazing until the permit is validated by fee payment specified in the bill for collection.

D. Permit Validation

The issuance of a bill for collection, payment of fees, and actual turning out of livestock will validate this permit for the number, kind and class of livestock, grazing allotment, and period of use for the particular year.

E. Permit Tenure

This permit is effective for one year following the issuance of the bill for collection unless waived, canceled, or otherwise terminated as provided herein. The grazing operation will be reviewed annually.

F. Ownership Requirement

1. Only livestock owned by the permittee are authorized to graze under this permit. To exercise use of the permit, the permittee will furnish evidence of ownership if requested by the National Park Service, including a copy of the certified brand registry.
2. The permittee is required to produce evidence of base property ownership (minimum of 40 acres, unless otherwise agreed upon by the superintendent) if requested to do so by the superintendent.

G. Range and Livestock Management

1. The allotment management plan is a part of this permit. The permittee will carry out its provisions and/or other instructions issued by the National Park Service for the area under permit, and will require employees, agents, and contractors and subcontractors to do likewise.
2. The number, kind and class of livestock and period of use specified in the permit or bill for collection may be modified when determined necessary by the superintendent for resource protection. Except in extreme emergencies where resource conditions are being seriously affected by livestock use or other factors such as fire, drought or insects, notice of a scheduled reduction will be given four months in advance. This does not apply to the annual adjustment in grazing as provided for in Part III, Section G. 3.
3. When NPS judges the forage is not ready to be grazed at the beginning of the designated grazing season, the permittee, upon direction from NPS, will defer placing livestock on the grazing allotment to avoid resource damage. The permittee will remove livestock before the expiration of the designated grazing season upon direction from NPS when further grazing will damage resources or threaten other park values. The permittee will

be allowed a credit or refund of grazing fees should the NPS direct livestock to be withheld after October 15 or removed before March 15.

4. The NPS will allow only the number and kind of livestock permitted in Part I during the period specified in the bill for collection including any modifications provided for in Part III, Section G. 3. Livestock will not intrude on any non-allotted areas of NPS administered lands.
5. The superintendent may, at any time, place, fasten, or require the permittee to place or fasten upon livestock appropriate marks or tags that will identify them as livestock permitted to graze on lands administered by the National Park Service. When directed by the superintendent, the permittee will at any time during the permitted period of use, including entry and removal dates, gather livestock to enable an accurate count to be made.
6. Only livestock marked as shown in the application for this permit, and as may be required under Part III, Section G. 5., will be allowed to graze under this permit unless the permittee has advance written approval from the superintendent to do otherwise.
7. The permittee will pay costs of, perform, or otherwise provide for, the proportionate share of cooperative structures and management practices on the permitted area when determined by the superintendent that such structures and practices are essential for proper protection and management of the resources.
8. This permit is used and accepted with the provision that the permittee will build and/or maintain all range structures which are assigned to him/her for maintenance, to standards of repair, orderliness, and safety acceptable to the National Park Service. The Memorial may maintain or otherwise improve said structures when in its opinion such action will be to its advantage.
9. Horses will not be permitted to graze at large within any portion of Coronado National Memorial.
10. The location of temporary holding pens, watering sources, and distribution and rotation of salt in the Memorial will be determined by the National Park Service, based upon park policies and best practices of range management. Before the grazing season, contact the superintendent for details on placement of salt blocks.
11. All pesticide use is subject to approval by the Director of the National Park Service. Use of any pesticide must be requested in writing by the permittee and approved in writing by the superintendent.
12. Supplemental feeding (hay, cake, protein blocks, etc.) will not be allowed except with the written permission of the superintendent.

13. No predator control will take place within Coronado National Memorial.
14. The United States reserves the right to perfect title to all rights for water which may be developed or used in connection with this permit. Should such water service be unavailable or inadequate, with prior approval of the superintendent, the permittee may, provide the same at his/her own expense, subject to requirements that may be prescribed by the NPS. It is understood that this permit will continue the privilege of using existing livestock watering facilities, and that any privately owned water system or structural appurtenance located on the land covered by this permit will become the property of the United States upon termination of the permit, unless otherwise agreed upon in writing by the superintendent.
15. The permittee will cooperate in any action necessary to remove trespass livestock from park lands not covered by this permit. Owners will be subject to prosecution if livestock are not removed in five days as specified in 36 CFR 2.61.
16. All gates must be closed before and after livestock enter the grazing units.

H. Non-use

1. At least 90 percent of livestock permitted must be grazed. Failure to place livestock on the allotted range may result in cancellation of this grazing permit, unless arrangements are made with the superintendent.
2. Fees will be charged for permit application only during periods of use and not during periods of non-use.

I. Protection

The permittee, his/her agents and employees, when acting within the scope of employment, and contractors and subcontractors will protect the land and property of the United States and other land under jurisdiction of the National Park Service covered by and used in conjunction with this permit. Protection will include taking all reasonable precautions to prevent and to report promptly all fires on or endangering such property.

The permittee will pay the National Park Service for any damage to its land or property including range developments resulting from his/her negligence or from violation of the provisions and requirements of this permit.

J. General

1. The superintendent may at any time require the permittee to give good and sufficient bond to insure payment for all damage, or costs to prevent or mitigate damages sustained by the National Park Service through the permittee's failure to comply with the provisions and requirements of this permit or the regulations on which it is based.

2. This permit will be canceled, in whole or in part, whenever the area described in this permit is withdrawn from grazing use or devoted to a public purpose that precludes grazing.
3. The permittee will immediately notify the superintendent of any change in his/her base property, ownership of livestock or other qualifications to hold this grazing permit.
4. The permanent structures constructed, or existing for use, in conjunction with this permit are the property of the United States Government. They will not be removed, nor compensated for upon cancellation of this permit.
5. The permittee cannot lease or transfer any part of the allotment to others to make up any shortage in the permit.
6. The permit may not be assigned or otherwise transferred without the prior written approval of the superintendent.

PART IV. GRAZING PERMIT MAINTENANCE RESPONSIBILITIES

- A. The permittee is responsible for the maintenance of following range structures, which are essential for proper management of the grazing allotment:

PART V. MAINTENANCE STANDARDS FOR RANGE STRUCTURES

A. General Instructions

1. Refer to the allotment management plan for instructions on structures.
2. At the end of the grazing season the permittee will report to the Superintendent on any changes made in range structures, including labor time and costs and cost of materials.
3. Structures must be built and properly maintained before livestock entering the Memorial.
4. Standards for range structures may change as better products or methods are developed.

B. Water Developments - Troughs, Pipelines, and Ponds Standards

1. All spring source facilities should be fenced and fences maintained to prevent livestock from getting into the source or the head box.
2. Head box lids or covers will be in place to prevent dirt, animals, and refuse from getting into the head box.

3. All outlet pipes and valves from head boxes will be functional. Leaking will be repaired in a timely fashion.
4. Water troughs will be kept at heights that make them usable to livestock. Troughs that become elevated from trampling by livestock should be periodically back-filled to maintain a useful height.
5. Troughs that become uneven due to settling will be reset and leveled.
6. Bottom of troughs will be kept clear of the ground with at least 2 to 4 inches of clearance under the bottom of the trough to prevent rusting or decomposition, unless mounted on concrete.
7. Water will not be allowed to overflow the sides of the trough. Overflow pipes must be kept clear. Overflow water will be piped away from the troughs at least 50 feet and be directed away from the trough area. The end of the overflow pipe must be protected from trampling by livestock.
8. Inlet and outlet pipe will be protected by anchoring to the trough with a single post next to the vertical pipe and a brace or pole supporting the horizontal pipe. The inlet and outlet pipeline will be buried as much as possible for their protection.
9. All troughs will be equipped with a floating board or pole secured near one end of the top rim of the trough and extend out into the trough far enough to provide a platform from which birds and rodents can escape or drink from the trough.
10. Troughs, storage tanks and pipelines will be drained and cleaned periodically to prevent moss and debris buildup and damage from freezing.
11. Poles, posts, and trough-framing materials used in the construction of the water development will be maintained, repaired or replaced as needed.
12. All aboveground pipeline supported structures will be maintained to keep the pipes at gradient and prevent sagging.

C. Range Fences - Construction Standards

1. Materials
 - a. Steel Posts: Steel posts with T-plates will be 6 feet in length, be 1 3/8 inches x 1 3/8 inches x 1/8 inches, and have clip-type wire fasteners. They will be for line posts and gates.
 - b. Steel Pipes: Black steel pipes will be 6 1/2 feet in length, 2 inches diameter, and 1/4 inch thick. They will be used as the corner posts in corner assemblies.

- c. Angle Iron: Angle iron will be 6 1/2 feet in length with other measurements 2 1/2 inches x 2 1/2 inches x 1/4 inch. Angle iron will be used to construct H-braces for end or in-line braces. They will be used with steel pipe to make corner assemblies.

- d. Wire: The following wires will be used for fencing:

Barbed Wire: This will be "American Glidden" 2-twisted strand, 12 1/2 gauge galvanized wire or "Sheffield 100" 2-strand, 13 1/2 gauge high-tensile strength galvanized wire. Barbs will be 2-pointed, 14-gauge wire spaced at 4-inch intervals.

Smooth Wire: This will be 2-strand and 12 1/2 gauge galvanized wire.

Stays: Stay wire will be 42 inches in length and 14 gauge galvanized wire.

Tie Wire: Use the smooth wire for corners, gates and braces.

Steel Post Clips: Spring clip fasteners will be 11 gauge galvanized wire.

2. Preservation of Natural Features

Exercise special care to maintain natural surroundings as undamaged as possible.

Restore damaged natural features not directly altered by fence construction as nearly as possible to the original condition.

3. Post holes and setting posts

- a. Line Posts: Steel posts must be driven a minimum of 16 inches in ordinary ground and not more than 20 inches. If rock formations prevent driving, remove the T-plate and excavate or drill holes a minimum of 18 inches deep and slightly larger than the diameter of the post. Place the post in the hole and anchor it solidly in position with non-shrinking grout or rapid-setting cement. If the post has a snug fit in the drilled hole, i. e. cannot be pulled out or wiggled loose, then grout or cement is not necessary, but the holes will be back filled with dirt. Driven posts that are bent are not acceptable.
- b. Steel posts will be spaced at 16-foot intervals. The spacing can be shortened a few feet for individual posts to avoid rocks, cliffs and stumps. Steel posts will not be used for corners or braces but will be used for fence panels and as part of the gate construction.
- c. Braces and Corners: Angle iron will be used to make H-braces for end or line braces. Corner assemblies will use pipe for the center post and angle iron for the remaining brace pieces.
- d. If the angle for the corner assembly exceeds 90 degrees, but is less than 175 degrees, the center post will be anchored by at least two guy wires wrapped around large stones (70

pounds or more), bolted and tied into rock, or tied onto stakes. The anchors will be placed far enough from the post so that the guy wires make approximate 45 degree angles with the post at top wire height. The guy wire will consist of 4-strand, galvanized smooth wire. The guys will not be tightened until the anchors are firm. The stake is a 1 to 1 1/2 foot steel stake driven into the ground at least 8 inches. A guy guard consisting of a 4-inch stick must be permanently attached to the full exposed length of each guy wire.

4. Grout or cement

Grout or cement will be used to set posts and, when necessary, braces. Products used will be non-shrinking grout (Dayton Superior Sure-Grip Grout or equal) or rapid setting cement (Rockite, Hardrock, Burke Stone or equivalent).

5. Application of barbed and smooth fence wire

- a. All wire will be tightly and uniformly stretched with due consideration for expansion and contraction that will result from variations in temperatures. It will be securely attached to steel posts, angle iron and pipe posts and brace bars with standard wire clips or smooth wire.
- b. All line wire will be cut and dead ended on corners, gates, and braces with the end being wrapped twice around the post and twisted back on the stretch wire a minimum of four times.
- c. Fence height and the number and spacing of wire strands will be as follows.

Top strand (smooth): 42 inches from the ground

Second strand (barbed): 12 inches below top strand

Third strand (barbed): 7 inches below second strand

Bottom strand (smooth): 7 inches below third strand and 16 inches above the ground

Total number of strands: 4

6. Stays

Three stays will be used in each 16-foot panel and evenly spaced between posts. Panels less than 12 feet in length can have two stays evenly spaced. Stays will be twisted and locked onto the top wire.

7. Depressions, ravines, and water gaps

Where the fence crosses small depressions and washes, the wire will be tied down and anchored with a heavy rock (70 pounds or more) in such a manner that the strain will not pull on the posts. For deeper water gaps, additional wires will be added to form an

effective barrier whenever the distance from the ground at the deepest point of the depression to the normal bottom wire exceeds 2 feet.

8. Gates

Gates will be at least 6 feet wide and flanked by an H-brace on both sides. It will be made of smooth wire. Wire will be attached to two steel line posts with the T-plates removed. The wire will have the same spacing described for the fence line. Smooth wire will be used to attach the gate to the brace posts and for the loop latches. Two stays will be evenly placed and will be locked on the top wire.

D. Range Fences - Maintenance Standards

1. All broken wires will be spliced and repaired in such a manner to maintain wire tension. Wire splices will be made with 12 gauge size tie wire or type of wire used in initial construction.
2. Broken or rotten posts, broken braces and missing clips or staples will be replaced where and when needed to maintain the fence.
3. Wires will be re-stretched where needed.
4. Broken or missing stays will be replaced where needed.
5. Staples will not be driven so deep into the post that they scar or create a weak spot in the wire.
6. Wire gate tension will be sufficient to prevent the gates from sagging and still be easily opened and closed. Gate loops should be made from smooth wire, not barbed wire.
7. Trees that fall on fences will be cut and removed when and where needed; wire, if broken, will be spliced and re-stretched; poles, if broken, will be replaced.

Allotment Permittee

Date

Superintendent, Coronado National Memorial

Date

**Environmental Assessment
for
Joe's Spring and Montezuma
Allotment Management Plans**

**Coronado National Memorial
Cochise County
Arizona
March 2000**

PURPOSE AND NEED

The National Park Service (NPS) is currently developing management plans for two allotments to guide the administration of domestic livestock use within Coronado National Memorial (Memorial), in southeastern Arizona. These plans are needed to provide for the long-term preservation and protection of natural and cultural resources within the Memorial, to provide for general recreational use by the public and to provide for specific authorized use of livestock grazing within the unit. The management plans are intended to provide the park staff with a comprehensive management strategy that will guide the program through normal staffing and administrative changes. The purpose of this environmental assessment (EA) is to present and analyze alternatives for domestic livestock grazing.

This environmental assessment identifies alternatives currently being considered for the livestock management program and the environmental consequences of each. They are 1) "no action" or maintaining the status quo, and 2) the implementation of a comprehensive management program. Alternatives considered and eliminated from further analysis included immediate elimination of grazing and other variations of program parameters such as stocking rate and season of use. The former was not considered further due to the time and effort needed to change the park's enabling legislation, as well as the social and political impacts of terminating grazing. Variations of other parameters included higher numbers of livestock and longer seasons of use; these were not analyzed in depth because they would not have achieved results consistent with the mission of the NPS.

Additionally, the EA will allow park managers, the public, and affected livestock permittees a way to compare the management alternatives under consideration. The document also serves as a vehicle by which all interested parties may review the proposed actions, provide comments and suggestions to the NPS concerning these and other alternatives they may generate, and generally participate in the decision making process. This EA will address possible conflicts, consider mitigating measures, and offer management alternatives for Joe's Spring and Montezuma Allotments.

A portion of the Joe's Spring Allotment is located on lands within the Coronado National Forest. Grazing on that portion is co-administered by the NPS and the United States Forest Service (USFS). In 1999, an agreement was entered into between the NPS and the USFS to co-administer the allotment. The agreement states that the NPS will issue permits and billing statements; payments for grazing will be deposited proportionately into NPS and USFS accounts. Both agencies monitor vegetation and allotment condition and are responsible for Endangered Species Act consultation on their respective portions of the allotment. The following assessment serves as NEPA documentation for both agencies.

This EA is being distributed to the public for review and comment. At the conclusion of the public review period, the NPS and the USFS will assess all comments and make a final decision, integrating pertinent comments, with respect to livestock grazing management at Coronado National Memorial. A decision document will then be issued by each agency. The

selected alternative will be used to finalize and implement the allotment management plans for use and reference by the National Park Service and allotment permittees.

INTRODUCTION

General Description

The Memorial is located approximately 20 miles south of Sierra Vista in Cochise County in southeastern Arizona (Figure II-1). It includes 4,750 acres and lies adjacent to the Mexican border. The Huachuca Mountains originate near the Memorial and extend north for some 30 miles. To the east lies a vast expanse of grasslands and the San Pedro River Basin. The Memorial was founded to commemorate the first major exploration of the southwest by Europeans, the expedition led by Francisco Vasquez de Coronado. The Coronado Expedition entered land that was to become the United States along the San Pedro River, which can be viewed from the Memorial. Two grazing allotments, Joe's Spring and Montezuma, cover 39 percent of the park.

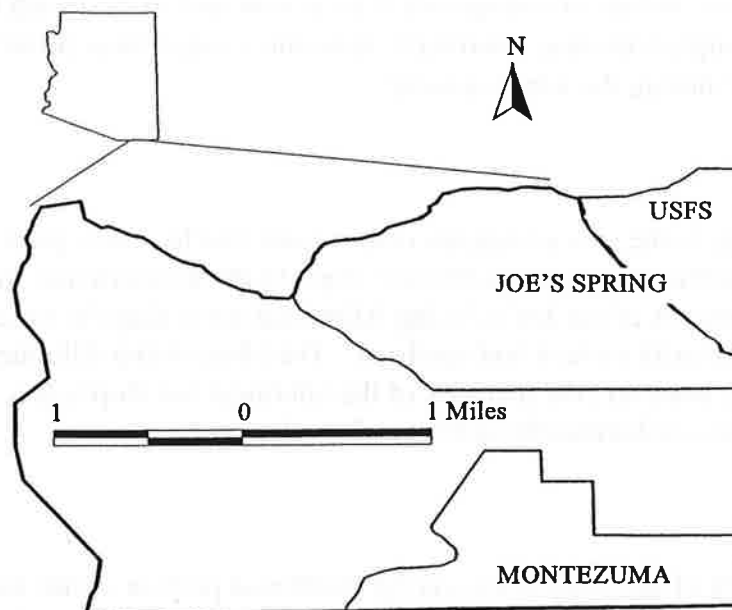


Figure II-1. Boundary of Coronado National Memorial (in bold), Cochise County, Arizona. Grazing allotments are labeled; Montezuma Allotment to the south and Joe's Spring Allotment to the north. The USFS portion of Joe's Spring Allotment is also identified.

The northern boundary of Joe's Spring Allotment is a partial fence and the natural barrier of the steep ridges of Montezuma and Bob Thompson Peaks. The allotment is bounded by the Coronado National Forest to the north. The eastern boundary of the allotment extends to the

eastern boundary of the Memorial. The southern boundary is a fence along the southern edge of sections 7 and 8, T24S, R21E of the Gila and Salt River Base and Meridian. The western edge is bounded by a partial fence and a steep escarpment. The Joe's Spring Allotment encompasses 1,143 acres within the Memorial and a 337-acre triangle-shaped area on the USFS land adjacent to the northeast boundary for a total allotment area of 1,480 acres.

The southern boundary of the Montezuma Allotment is the United States/Mexico International Border. The western boundary is a barbed wire fence extending to a natural barrier of steep slopes that provides the balance of the western boundary. The northern boundary is an incomplete barbed wire fence. The eastern boundary is coincidental with the eastern boundary for Coronado National Memorial. This allotment covers 668 acres of primarily semi-desert grassland.

Climate

Average yearly precipitation ranges from 10 to 30 inches with a mean of 21 inches. Approximately 40% of the precipitation in this area falls during the summer "monsoons" in July and August, and about one-quarter falls as rain and snow during the winter months, December through February. Normal temperatures range from 50 to 90°F during the summer and 30 to 50°F during the winter months.

Topography

The topography in the two allotments ranges from less than two-percent slope in the eastern and southern portions to areas of extreme slope in the northern and western areas (Figure II-2). Over 60 percent of the Joe's Spring Allotment has a slope in excess of 30 percent. Aspects are primarily eastern and southern. The Montezuma Allotment also has a variety of slopes present; however, the majority of the allotment has slopes less than 20 percent. Aspects are also predominately eastern and southern.

Geology

The parent rock of the steep slopes on the southwest portion of the Joe's Spring Allotment is Jurassic granite and the northwest portion consists of a complex of Jurassic dacite tuff and caldera-collapse breccias. These breccias include blocks and masses of calc-silicate hornfels and interbedded sandstone and red shale. Colluvial and alluvial deposits cover nearly half of the Joe's Spring Allotment to the south and east.

Alluvial deposits cover the eastern portion of the Montezuma Allotment with small areas of granite and sedimentary rock outcrops to the northwest of the allotment. The southwest area of the allotment consists of Jurassic dacite tuff and caldera-collapse breccias. The breccias in this unit include blocks and masses of pre-caldera andesite and dacite lava and Paleozoic limestone.

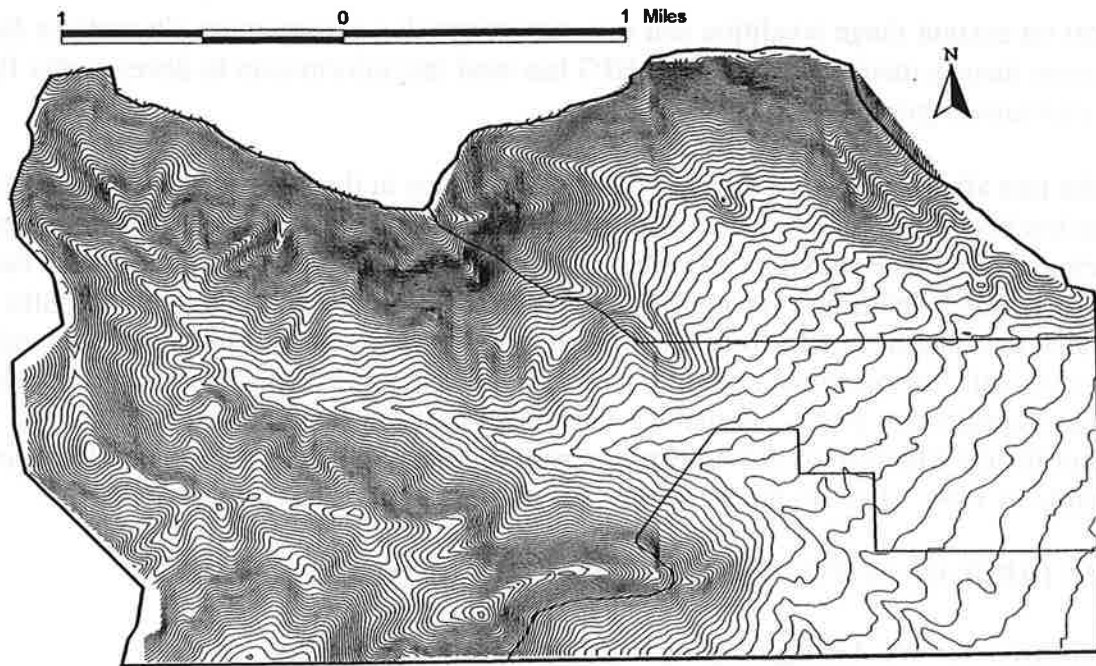


Figure II-2. Topography of Coronado National Memorial (in bold), Cochise County, Arizona. Montezuma Allotment is shown to the south and Joe's Spring Allotment to the north.

Grazing History

Coronado National Memorial was created from USFS and private lands on which cattle grazing has occurred since about 1900. The legislation authorizing the establishment of Coronado National Memorial directed the Secretary of the Interior to permit livestock grazing "...within the Memorial area to the extent now permitted within the said area when such grazing will not interfere with recreational development..." While the area was authorized as a unit of the NPS in 1941, it was not until 1952 that it was established through the acquisition of USFS and private lands. In 1978, a boundary expansion included one additional allotment for a total of four allotments. Two allotments were retired in 1990, leaving the Joe's Spring and Montezuma Allotments active.

Until 1992, the allotments were administered and managed by the USFS under a Memorandum of Understanding (MOU) with the NPS. NPS staff became more involved in range management in 1987 when working with the USFS on the revised MOU and an allotment management plan for one permit. The NPS began directly administering the two remaining allotments in 1992, after the MOU expired and was not renewed. The NPS now directly administers and manages cattle use and permits within its boundaries.

The Montezuma Allotment is entirely within the Memorial and administered by the NPS. The NPS and USFS are jointly administering the Joe's Spring Allotment that occurs on both NPS and USFS lands. The USFS portion of that allotment is included in this EA. In 1994, the University of Arizona School of Renewable Natural Resources was contracted to prepare a

report on current range condition and recommend grazing management alternatives for NPS resource management concerns. The NPS has used this information to develop this EA and the alternatives proposed.

Of the two allotments, Joe's Spring Allotment has been in the same family since the 1930s and there has been little change in the manner of grazing over the decades. Historic records of grazing permits date back to 1936 (Ogden 1995). Since 1966, seasons of use have been primarily fall, winter, and spring and the permit has been for 432 animal unit months (AUM). Animal unit month is defined as the amount of dry forage required by one animal unit, in this case cow/calf, for one month based on a forage allocation of 26 pounds per day (Society for Range Management 1989). Actual use has varied near the permitted level of AUM. The permit for the Montezuma Allotment has changed ownership four times since 1980, most recently in 1994. This allotment has not been stocked since the spring of 1990.

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVE

Alternative A. No Action - Continue with present management.

Management will continue as it has since 1992. Annual AUM allocations will remain unchanged. The NPS will essentially continue to monitor livestock use within the Memorial. Studies of endangered bat species and agaves were initiated and will continue. Inventory and monitoring of range condition have also been undertaken and will likely continue at irregular intervals. Authorized grazing use for the allotments will be for a cow/calf operation that has a total allocation of 432 AUM for the Joe's Spring Allotment and 214 AUM for the Montezuma Allotment. There will be no scheduled rest of the pastures. The season of use will continue to run from November 16 through July 15.

Grazing fees will continue to be charged according to 36 CFR 222.51. NPS administrative guidelines require that application, administrative, management, and land use fees be assessed for costs incurred in managing special park uses (NPS 1998). Under this alternative, all costs incurred by the NPS will be billed to the permittee. While these costs have not been charged in the past, NPS guidelines now require the Service to do so. Consequently, even under the "No Action" alternative, these fees will now be assessed. Costs incurred by the Service in the areas listed above will be billed to the permittee at the hourly rate at which they are incurred and/or cost of supplies. These fees are described in detail in the livestock management guidelines.

Alternative B. Proposed Alternative - Intensify grazing management.

The proposed action alternative will involve management which will modify both length and intensity of livestock use in order to meet NPS objectives for resource protection based on policies and guidelines. This alternative was developed from resource concerns for range health and the occurrence of sensitive bat species. The maximum permitted AUM will be reduced from 432 AUM to 214 AUM for Joe's Spring Allotment and reduced from 214 AUM to 126 AUM for Montezuma Allotment. The reduction in AUM will aid in bringing livestock

numbers in balance with the carrying capacity of the pasture. Carrying capacity calculations can be found in parts III and IV of this document. The Montezuma Allotment has been placed in a five-year non-use period. Grazing will then resume at the 126 AUM level. The number of livestock for the Joe's Spring Allotment will be decreased by 54 AUM per year for four years to reach the target of 214 AUM. The number of livestock may be further adjusted depending on resource conditions or other management concerns, e.g. recreation or wildlife habitat.

Actual permitted AUM will be adjusted under this option based on range condition, community carrying capacity, and livestock distribution (see the allotment management plans for a description of how AUMs were determined). Allotments will be rested in one out of three years. The targeted season of use will be from October 15 through March 15. However, environmental conditions, such as drought or fire, will be considered and dates modified accordingly. Key areas of agave may be fenced to maintain food supplies for sensitive bat species; a study is ongoing in the Memorial to better understand the population ecology of agaves and their importance as a bat food source. Allotment fences will be improved to wildlife standards to provide access for wildlife species.

Each year the operation will be evaluated on the previous season's grazing pattern and the present season's resource conditions. Actual numbers of livestock permitted will be dependent on the number of days the allotment will be used and resource conditions. Establishing a comprehensive vegetation-monitoring program will be an integral aspect under this alternative.

Thus there are four key components to this alternative: 1) reduce AUM in order to more moderately impact native vegetation, 2) adjust season of use in order to avoid grazing during vegetative growing seasons, 3) implement a comprehensive vegetation monitoring plan and 4) provide flexibility of use in both number of AUM and season of use, based on environmental indicators. As with Alternative A, all costs incurred by the NPS in managing this special park use will be billed to the permittee.

AFFECTED ENVIRONMENT

Soils

Soils are variable with soil depths ranging from less than 20 inches on the steeper slopes to greater than 60 inches on the lower slopes. They are typically high in rock fragments. Sandy loams and gravelly sandy loams are the most frequently encountered surface and subsurface textures. Other textures present include sandy loam, coarse sandy loam, clay loam and gravelly clay. Erosion potentials range to high and should be of concern with regard to grazing. This is compounded by soils that have rapid runoff potentials and low water holding capacity. For a more detailed description of soils, see Richardson et al. (1979), Ruffner and Johnson (1991), Ogden (1995), and Denny and Peacock (1996).

Watershed

Montezuma Canyon is the major drainage with several ephemeral streams draining to the southeast. Joe's Spring Allotment drains into both Montezuma Canyon and directly to the San Pedro River in the United States. Drainages of Montezuma Canyon run into Mexico through the Montezuma Allotment before draining into the San Pedro River. The NPS has the responsibility to administer their lands so that water from these lands meet federal and state clean water standards as enforced by the Arizona Department of Environmental Quality (ADEQ). The ADEQ guidelines provide best management practices to follow in order to meet standards. The allotment management plans in parts III and IV provide the basis for managing grazing using best management practices. The NPS is also mandated to adhere to standards set by the Clean Water Act. Evidence of stream bank erosion and down cutting can be seen in both allotments. Additionally, large amounts of eroded soils that have been transported downstream can be seen along drainage ways.

Vegetation and Range Condition

Four plant associations have been identified in the area (Figure II-3) (Ruffner and Johnson 1991). They are Oak-Mexican Pinyon-Juniper Association (QPJ), Grama species Mixed Grass-Mixed Shrub Association (BMM), Sycamore-Walnut-Oak Association (PJQ), and Honey Mesquite-Mixed Short Tree Association (PMT). QPJ and BMM are the most common plant association present in the allotments.

Common plant species in the allotments include Lehman lovegrass (*Eragrostis lehmanniana*), blue grama (*Bouteloua gracilis*), plains lovegrass (*Eragrostis intermedia*), sideoats grama (*Bouteloua curtipendula*), tanglehead (*Heteropogon contortus*), sprucetop grama (*Bouteloua chondrosioides*), and cane beardgrass (*Bothriochloa barbinodis*). Common shrubs and trees include false mesquite (*Calliandra eriophylla*), Emory oak (*Quercus emoryi*), mesquite (*Prosopis glandulosa*), agave (*Agave* spp.), and manzanita (*Arctostaphylos* spp.). Over 580 plant species were identified within the Memorial (Parfitt and Christy 1992).

For purposes of this report potential natural community (PNC) is defined as the biotic community that would become established if all successional sequences were completed without interference by humans under the present environmental conditions (Society for Range Management 1989). In addition to PNC, the other standard condition classes are early, mid, and late seral. Range condition is computed as a number between 0 and 100, representing the percentage of potential vegetation. Ratings of 0 to 25 are considered early seral, 26 to 50 as mid seral, and 51 to 75 as late seral. Scores above 75 are classified as PNC. Utilization is defined by the Society for Range Management (1989) as the "proportion of current year's forage production that is consumed or destroyed by grazing animals."

The current range condition varies between and within allotments. Joe's Spring Allotment, due to the presence of steep slopes, has conditions of mid seral to potential natural community vegetation (PNC). Approximately 54 percent of the allotment was rated as PNC during a

recent inventory effort, 34 percent was rated as mid seral, and 12 percent was not rated (Ogden

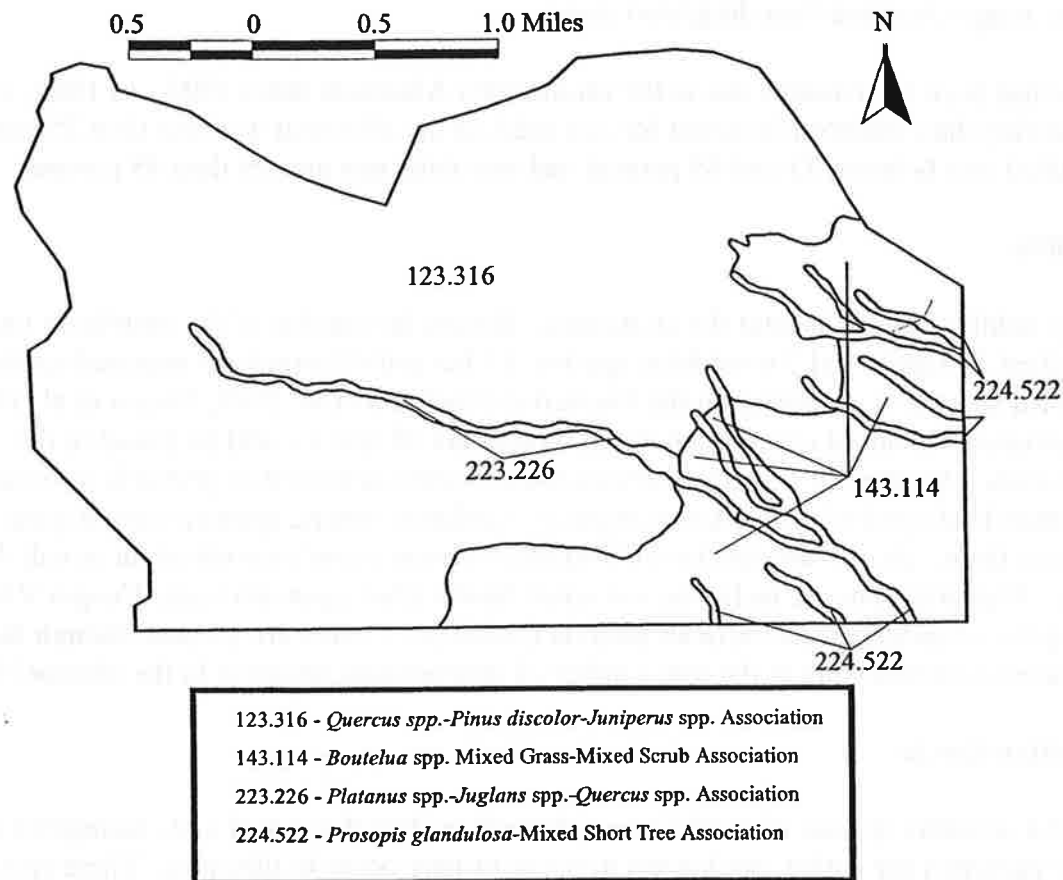


Figure II-3. Vegetation associations present at Coronado National Memorial as mapped by Ruffner and Johnson (1991).

1995). It is noted that the range inventory did not consider all factors of range health during the survey, thus conditions may have been over estimated. For example, consideration was not given to erosion nor age distribution of plant species. There is a positive correlation between slope and range condition, indicating areas of use on lower slopes are in poorer condition than steeper areas that are not utilized.

Livestock use for the Joe's Spring Allotment is concentrated on the lower slopes in the southern one-third of the allotment. Utilization data collected in 1989 demonstrated that the southern portion of the allotment had utilization levels of more than 30 percent, with a subset of the area, near water, of more than 45 percent use. In 1995 and 1996, inspection of the allotment showed utilization to be in excess of 50 percent throughout much of the lower portion of the pasture (L. Benson, per. obs.).

Range conditions on the Montezuma Allotment vary from early seral to PNC. Inventory results indicate that 23 percent is in early seral, 17 percent is mid seral, 43 percent is late seral, and 16 percent is PNC (Ogden 1995). Much of the eastern portion of the allotment is

dominated by Lehman lovegrass, a non-native, introduced grass, and is primarily rated as early seral. As stated above, areas that are inaccessible to livestock or used only slightly show higher range condition than do grazed areas.

There has been no livestock use in the Montezuma Allotment since 1990. In 1985, USFS monitoring data showed utilization for one-third of the allotment was less than 25 percent, one-third was between 25 and 45 percent and one-third was greater than 45 percent.

Wildlife

Many wildlife species inhabit the allotments. Recent inventories of the vertebrate fauna have identified 29 reptile and 7 amphibian species, 11 bat and 40 terrestrial mammal species and 190 bird species as occurring on the Memorial (Cockrum et al. 1979, Swann et al. 1998 and unpublished Memorial observation data), though not all species will be found in the allotments. Another 50+ species of vertebrates were considered as probable or extinct. Common bird species include hummingbirds, warblers, wrens, sparrows and a great diversity of other birds. Acorn woodpeckers (*Melanerpes formicivorus*) are abundant in oak dominated areas. Raptorial species, including red-tailed hawks (*Buteo jamaicensis*), Cooper's hawks (*Accipiter cooperii*), and American kestrels (*Falco sparverius*) are present, though not considered common due to the low number of observations recorded in the Memorial.

Sensitive Species

Several sensitive species of wildlife from federal or state threatened and endangered lists, or those proposed for listing, are known to occur or may occur in this area. These species are shown in Table II-1. A large number of sensitive species occur at the Memorial due to the diversity of habitats present. There are no known sensitive plant species within the allotment boundaries. National Park Service policy is to treat all sensitive species in an equal manner, regardless of actual status (NPS 1991).

Of concern within the allotments are the relationship of sensitive bat species, agave populations and the impact from grazing. Nectarivorous bat species (*Leptonycteris curasoae* and *Choeronycteris mexicana*) are known to use the allotments for feeding activities. They primarily feed on flowering agaves during their period of stay at the Memorial. Barking frogs (*Hylactophryne augusti*) also inhabit rocky limestone areas of the Joe's Spring Allotment.

Cultural Resources

There are over 50 known cultural resource sites within the allotments (Campbell (in prep.), Tagg 1985, Stewart and Purves 1975). Several lithic scatter sites have been located, as well as many tool fragments suggesting that the area may have been used as base camps or smaller working camps by early inhabitants of the region. Foundations of a historic ranching operation exist in one allotment. A historic graveyard, which is on the NPS List of Classified Structures (LCS), is located in the Montezuma Allotment and has been fenced. This is the only LCS site within the allotments. Historic mining sites are present in both allotments.

Table II-1. Sensitive species of Coronado National Memorial, Cochise County, Arizona.

Common Name	Scientific Name	Federal Status	State Status	CORO Status
Lesser Long-nosed Bat	<i>Leptonycteris curasoae</i>	Endangered	WC	Present
Mexican Long-tongued Bat	<i>Choeronycteris mexicana</i>	Species of Concern	WC	Present
Barking Frog	<i>Hylactophryne augusti</i>	No Status	WC	Present
Loggerhead Shrike	<i>Lanius ludovicianus</i>	Species of Concern	No Status	Present
Elegant Trogon	<i>Trogon elegans</i>	No Status	WC	Present
Mexican Spotted Owl	<i>Strix occidentalis lucida</i>	Threatened	WC	Present
Peregrine Falcon	<i>Falco peregrinus</i>	Endangered	WC	Present
Arizona Shrew	<i>Sorex arizonae</i>	Species of Concern	WC	Historic
Black-tailed prairie dog	<i>Cynomys ludovicianus</i>	No Status	WC	Historic
Ocelot	<i>Felis pardalis</i>	Endangered	WC	Historic
Jaguarundi	<i>Felis yagouaroundi</i>	Endangered	No Status	Historic
Jaguar	<i>Panthera onca</i>	Endangered	WC	Historic
Mexican Grey Wolf	<i>Canis lupus baileyi</i>	Endangered	WC	Historic

WC - wildlife of special concern in Arizona

Social

As development in the area has increased, so has visitor use of the park. The population of Cochise County has risen from 85,686 in 1980 to 124,575 in 1999, an increase of 45%. During the same time, the number of housing units rose 33%, from 32,500 to 43,394. Much of the San Pedro River basin near the Memorial has become urbanized and visitation to the Memorial has risen accordingly in recent years. In 1981, the number of visitors was 47,825, compared with 89,691 in 1999, an 87% increase. Figure II-4 illustrates visitor use statistics from 1981 through 1999.

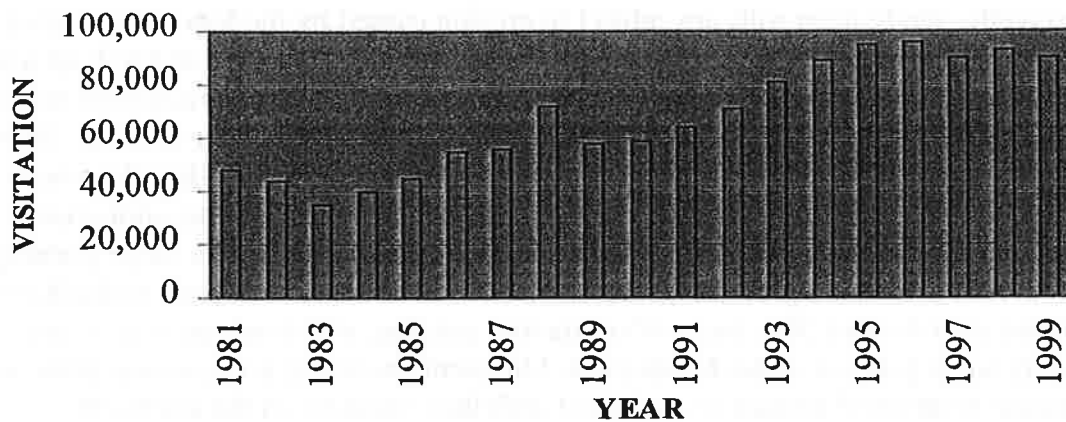


Figure II-4. Annual visitation for 1981-1999 at Coronado National Memorial, Cochise County, Arizona

Interactions between visitors and cattle are increasingly possible in the area in and around the grazing allotments. Visitors to national parks are not accustomed to interacting with grazing

livestock and associated developments, such as fences and water troughs. Increasing demands for hiking, birding, and biking activities will result in a need for recreational developments near the grazing allotments. Developments may include trails, picnic areas, parking lots and restrooms. The USFS is constructing a trail system along the eastern side of the Huachuca Mountains that may eventually connect to the Memorial boundary near its northeast corner. The Memorial will likely promote trail development through the eastern portions now occupied by the grazing allotments if the USFS trail is constructed near the Memorial.

There are two permittees currently being issued grazing permits at Coronado National Memorial. One permittee (for Joe's Spring Allotment) has held grazing permits for the allotment since 1936. The permittee for the Montezuma allotment has held the grazing privilege since 1994. However, the permittee has been issued non-use permits since then, therefore no livestock have been run on this allotment since 1994. Both allotments have developments that are in need of repair or replacement, fences, water wells and water troughs are old and need to be updated. The Montezuma Allotment has extensive repairs needed before placing livestock on it. Water needs to be properly developed in a location suitable to meet livestock needs and acceptable to park managers. A section of fence needs to be installed and the entire fence needs to be modified to the standards established in the allotment management plan. Repairs on the Joe's Spring Allotment are less extensive and include bringing fencing up to standards and repairs on water developments.

ENVIRONMENTAL CONSEQUENCES

Alternative A. No Action - Continue with present management.

Soils

The gravelly, sandy-loam soils are subject to erosion caused by the loss of vegetative cover and/or the occurrence of infrequent torrential rains. Keeping the current levels of livestock use will continue to erode soils as cattle hooves destroy cryptobiotic crusts (soil organisms that bind the soils and prevent soil loss) and subject soils to wind and water erosion. Soils loosened by trampling and the removal of vegetation whose roots stabilize these soils will continue to be susceptible to erosion. Erosion potentials are high on the approximate 60 percent of the Joe's Spring Allotment where slopes exceed a 30 percent slope (Denney and Peacock 1996). Erosion problems, such as soil compaction and soil loss, which have developed over the past 50+ years of continuous grazing, will continue to increase. The relatively small portions of the Montezuma Allotment exceeding a 20 percent slope would also experience accelerated erosion as compared with the remainder of the allotment.

Soil compaction will also continue to occur under this alternative. Evidence in the field indicates that areas within the Joe's Spring Allotment have become compacted with use (D. Robinett, Natural Resource Conservation Service, pers. comm.). Increased soil compaction caused by grazing livestock will reduce soil fertility, which will lead to reduced plant productivity and changes in plant composition.

Watershed

Cattle congregating to graze and water at ephemeral streambeds trample vegetation and compact soils, leading to stream bank sloughing, soil erosion and decreased water quality (Armour et al. 1991). Unstable stream banks lead to increased sediment load in the water and decreased water quality during periods of runoff. Water moves through the system quickly, due to a lack of vegetative cover, resulting in increased erosion. The condition of some portions of the watershed has degraded to an unacceptable level that does not meet NPS standards for resource management. Continued grazing at the current stocking rates will continue this unacceptable trend in watershed condition.

Vegetation and Range Condition

This alternative will lead to continued sub-standard conditions including reduced productivity and range condition on both allotments. Non-native and cool season grasses have replaced native warm season grasses in some areas and will continue to do so (D. Robinett, Natural Resource Conservation Service, pers. comm.). Range surveys conducted over the past six years have shown the range condition over much of the allotments to be in early or mid-seral condition, NPS management goals for these allotments call for the vegetation trend to be upward and moving towards a rating of late or higher condition. Decreases in diversity and cover of palatable grasses have been observed in several grazing studies in southeast Arizona (Bock and Bock 1993, Brady et al. 1989, Ellison 1960). This process has already occurred over much of the Montezuma Allotment where Lehman lovegrass, a non-native grass, dominates. Lehman lovegrass is also found on the Joe's Spring Allotment but does not yet dominate the plant community. Non-native plants also dominate in high impact areas of corrals and water troughs. Native shrubs may also increase in density due to a lack of competition from grasses and forbs (Bahre 1995). Grazing has been shown to reduce root density of native grama grasses (Blydenstein 1966); several grama species occur in both allotments.

The overall health of the allotments with the current level of use would likely further degrade over time. Woody and shrubby vegetation may displace herbaceous species, thus reducing range condition of these primarily desert grassland sites.

Wildlife

The potential exists to impact many wildlife species under this alternative. Grazing has been shown to have a variety of impacts including changes in bird community composition (Bock and Webb 1984, Bock et al. 1984), lizard species (Bock et al. 1990), and decreased grasshopper productivity (Jepson-Innes and Bock 1989). Reduced plant cover will tend to favor species adapted to habitats that are more open. Ground nesting birds would be limited due to unsuitable habitat. While grazing will probably not directly eliminate wildlife species, decreases in local population densities will continue to occur. Species diversity can be expected to decrease further over time. Habitat generalists and species identified with

disturbed or early seral condition will be favored. Further studies are needed to determine local effects of grazing on native wildlife populations.

Sensitive Species

The lesser long-nosed and Mexican long-tongued bats are of particular concern due to the effect of grazing on agave plants, an important food source of the nectar-feeding bats. Both allotments contain large numbers of agave. Nectar-feeding bats may be negatively impacted by reductions in agave populations, therefore the NPS will continue monitoring both agaves and bats. Bat surveys have been conducted during the past three summers to determine species present. Additionally, a bat roost site outside of the grazing allotments is being monitored for bat numbers. Bat foraging of agave plants is also being studied; preliminary data show that bat visits to individual agave plants range as high as 1500 to 3800 per night (Y. Petryszyn, University of Arizona, pers. comm.).

Barking frogs occur in Joe's Spring Allotment; however, impacts will probably be minimal due to the rocky, inaccessible nature of the habitat in which the frogs are found. At this time no known impacts are anticipated on other sensitive species.

Cultural Resources

While a complete inventory of cultural resources is lacking, some sites of historical activity have been identified. These sites are mainly prehistoric lithic scatter plots, which are known to be damaged by foraging livestock (Osborn and Hartley 1993), especially ceramic artifacts. A cemetery site is located within the Montezuma Allotment and has been fenced for protection.

Social

The permittees will be less affected by this alternative. Higher stocking rates will result in higher financial returns for the livestock owners. Less intensive NPS management will also mean lower costs to maintain the allotment and no costs associated with monitoring will be incurred. Costs incurred by the NPS will still be charged back to the permittees. These costs will include fees for permit processing and any staff costs associated with administering the livestock program under this option. Impacts to the permittee are anticipated under this alternative in the event that increases in recreational development displace livestock in the future.

At the current visitor use level, some impact on recreation will occur from cattle grazing in the two allotments. Complaints have been received regarding livestock in the Memorial. Reduced aesthetics and disturbed habitats degrade the visitors' experience. The park has received letters of inquiry asking why cattle graze in the Memorial. As the local population grows, the demand for recreation will increase and will create greater conflicts with livestock grazing. Currently, visitor use is increasing in the Montezuma Allotment in and around grasslands and riparian areas.

Visitors who anticipate a "natural" environment and anticipate the opportunities to view natural varieties and populations of wildlife and vegetation, will not find those experiences or attributes available within the allotments. Those interested in administering the Memorial as a preserve for native plant and animal life amidst a region heavily used by the livestock industry, will be disappointed in the NPS effort to continue livestock grazing within the relatively small unit. Those persons enjoying the presence of cattle on public lands will be pleased by an NPS decision to maintain the status quo.

Cumulative Impacts

Under this alternative there are no known cumulative effects.

Alternative B. Proposed Action - Intensify grazing management.

Soils

Impacts will be similar to Alternative A, but will be reduced by lowering livestock numbers and altering distribution. The impacts will be partially mitigated by resting the pastures once every three years. Some soil erosion and soil compaction will still occur under this alternative.

Watershed

Increasing the level of management through a reduction in annual AUM and resting pastures one out of three years will improve watershed conditions by increased vegetative cover along stream corridors. Water quality will improve with a decrease in sedimentation, fecal coliform and other microbes with a lower stocking rate. However, grazing, even at reduced levels, would continue to degrade watersheds resulting in soil erosion, reduced plant cover and altered plant communities.

Vegetation and Range Condition

Adopting lower levels for livestock use and resting pastures are expected to improve the current vegetation condition over time. Monitoring vegetation condition will also help protect the vegetation resources. Modifications to the grazing schedule during drought and after fire will aid in maintaining or improving vegetative conditions. Cover and density of plants, especially warm season grasses, will be maintained or increased with this alternative. Bock et al. (1984) found that, in an area excluded from grazing, grass cover was substantially higher than grazed areas. Brady et al. (1989) found no difference in plant cover within grazing enclosures, but reported significantly higher cover of tall grasses, such as plains lovegrass.

Reducing stocking levels and modifying season of use will allow native grass species to increase, this in turn would increase the range condition ratings on the allotments. Reducing impacts to soils and watershed will also aid in increasing the overall range health of the

allotments. Increasing range condition can improve productivity of livestock and thus improve weight gains of livestock.

Wildlife

Reducing livestock numbers and increasing the intensity of management will result in reduced impacts to wildlife species. More food and cover will be available to wildlife. The availability and quality of grassland bird nesting habitats will be enhanced by increasing ground cover and eliminating livestock during the breeding season. Quality of habitat would be increased for most wildlife species with this alternative. Impacts would still result as a consequence of forage plant removal and consistent perturbations to the system.

Sensitive Species

Reductions in livestock numbers and rest rotation grazing will aid in protecting important areas of agaves and would decrease impacts on nectar-feeding bats. Adjusting the grazing season will allow protection to agave plants during the growing season, increasing survival. NPS will continue to monitor bat and agave species to improve our understanding of their habitat needs.

Barking frogs occur in Joe's Spring Allotment; however, impacts will probably be minimal due to the rocky, inaccessible nature of the habitat in which the frogs are found. At this time no known impacts are anticipated on other sensitive species.

Cultural Resources

Cultural sites can still be impacted with this alternative, but the degree of impact will be reduced. Management that is more intensive can aid in identifying archeological sites and provide data needed to protect these resources.

Social

The potential will still exist for conflicts with recreation as the park receives increased visitor attendance. Reducing the number of livestock will result in lower economic gains for the permittees. Additionally, inputs of labor and materials by the permittees will be greater than with Alternative A. Intensifying management will increase the administration costs to the NPS and increase the amount of time Memorial employees spend on grazing issues. Hence, costs for the permittees will be greater.

Cumulative Impacts

The proposed intensified management actions will result in beneficial cumulative impacts for wildlife, vegetation, recreation and watershed values on the allotments.

CONSULTATION AND COORDINATION

This environmental assessment, including the two draft allotment management plans for Coronado National Memorial, is being distributed to the public for a 30-day public review period. Copies will be sent to:

- Federal agencies including the U. S. Fish and Wildlife Service, U. S. Forest Service, and Bureau of Land Management
- Arizona Game and Fish Department
- Arizona Department of Environmental Quality
- All individuals and/or companies holding permits in the Memorial
- Local and state cattleman's groups and organizations
- Chambers of Commerce for Sierra Vista and Bisbee, Arizona
- Local and state environmental and user groups
- Any person requesting a copy

A news release announcing the availability of the documents and inviting public comment has been distributed to newspapers, television and radio news stations in the cities of Sierra Vista, Tucson and Bisbee, Arizona. This release details the specific dates for the 30-day public review period and the process for finalizing the draft plans.

If it is determined to be needed, the NPS will also conduct an evening public workshop in the city of Sierra Vista to provide additional opportunities for the public to comment on the plans. This workshop will be held before the completion of the final management plan.

At the conclusion of the public review period, including the public workshop, if conducted, the National Park Service will evaluate the comments received and make a final decision, integrating salient comments, with respect to grazing management at Coronado National Memorial. The NPS will document that decision in a written record that will be mailed to all individuals, groups, organizations, and governmental agencies that have expressed an interest in the issue. The NPS then will implement the decision within a reasonable time as specified in the decision document.

This EA was prepared by Lee Benson, Wildlife Biologist, Southern Arizona Office, NPS.

Persons consulted in preparation of the EA were:

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Joe's Spring Allotment Management Plan

Coronado National Memorial

Cochise County

Arizona

March 2000

INTRODUCTION

The Memorial was created from United States Forest Service (USFS) and private lands on which cattle grazing has occurred since about 1900. When established, the 1952 legislation authorized livestock grazing on allotments "within the Memorial area to the extent now permitted within the said area when such grazing will not interfere with recreational development authorized by this Act." In 1978, as a result of a land exchange with the USFS, the boundary changed and the Memorial acquired one more allotment (Joe's Spring) for a total of four allotments. Until 1992, the allotments were administered and managed by the USFS under a Memorandum of Understanding (MOU) with the National Park Service (NPS). The permit for the Joe's Spring Allotment has been held by the same family since 1936.

The NPS is responsible for administering and managing the cattle use and permits within the park boundaries. The Memorial began directly administering the allotment in 1992 when the MOU expired. In 1994, the University of Arizona School of Renewable Natural Resources was contracted to prepare a report on range condition and grazing management alternatives to guide resources management concerns of the NPS with the grazing operations.

In 1999, an agreement was entered into between the NPS and the USFS to co-administer the allotment. The agreement states that the NPS will issue permits and billing statements; payments for grazing will be deposited proportionately into NPS and USFS accounts. Both agencies monitor vegetation and allotment condition and are responsible for Endangered Species Act consultation on their respective portions of the allotment.

While the enabling legislation allows grazing to continue at the Memorial, the issue has been raised as to the conflicts that exist between the mission of the NPS and the potentially detrimental effects of grazing upon the landscape. Two of the original allotments were willingly and permanently retired within the Memorial by the permittee in 1990, portions of these allotments with Coronado National Forest are still active. The NPS will work towards permanently retiring the remaining allotments as opportunities arise to do so through mutual agreement with the permittees. Until this can be accomplished, this plan will serve to moderate the impacts of grazing. **This plan includes changes in dates of grazing and forage allocation that have not yet had public review; they are subject to change pending a formal decision by the NPS.**

GENERAL INFORMATION

The Memorial is located about 20 miles south of Sierra Vista in Cochise County in southeastern Arizona (Figure III-1). It covers 4,750 acres and lies on the Mexican border. The Huachuca Mountains originate near the Memorial and extend north for some 30 miles. To the east lies a vast expanse of grasslands and the San Pedro River.

The eastern boundary of Joe's Spring Allotment extends to the eastern boundary of Coronado National Memorial. The northern boundary is a natural barrier, the steep ridgelines of

Montezuma and Bob Thompson Peaks, which is also the northern park boundary. The southern boundary is a fence along the southern portion of sections 7 and 8, T24S, R21E, Gila and Salt River Base and Meridian. The western edge is bounded by a partial fence and a steep escarpment. The Joe's Spring Allotment encompasses 1,143 acres within the Memorial and 337 acres on USFS land bordering the northeast boundary of Coronado for a total area of 1,480 acres.

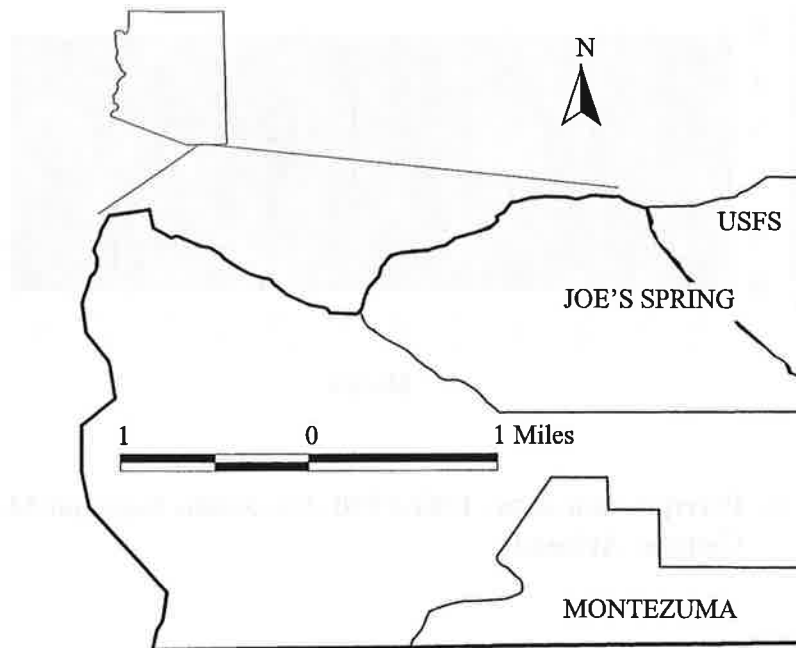


Figure III-1. Boundary of Coronado National Memorial (in bold), Cochise County, Arizona. Grazing allotments are labeled, Montezuma Allotment to the south and Joe's Spring Allotment to the north. The USFS portion of Joe's Spring Allotment is also identified.

RESOURCE DATA

Elevation and Topography

Elevations range from 4,960 to 7,680 feet within the allotment. The allotment is composed primarily of steep, rocky slopes on the north side grading into moderate to shallow slopes to the south. Aspects are primarily eastern and southern. Slopes range from about 5 percent to greater than 30 percent. More than one-half of the allotment has slopes greater than 30 percent. In areas of rock outcrops, slopes exceed 60 percent.

Climate

Average yearly precipitation ranges from 10 to 30 inches with a mean of 21 inches. Approximately 40% of the precipitation in this area falls during the summer "monsoons" in July and August, and about one-quarter falls as rain and snow during the winter months, December through February. Normal temperatures range from 50 to 90°F during the summer and 30 to 50°F during the winter months. Figure III-2 displays a 30-year average (1961-1990) of precipitation data collected at the Memorial.

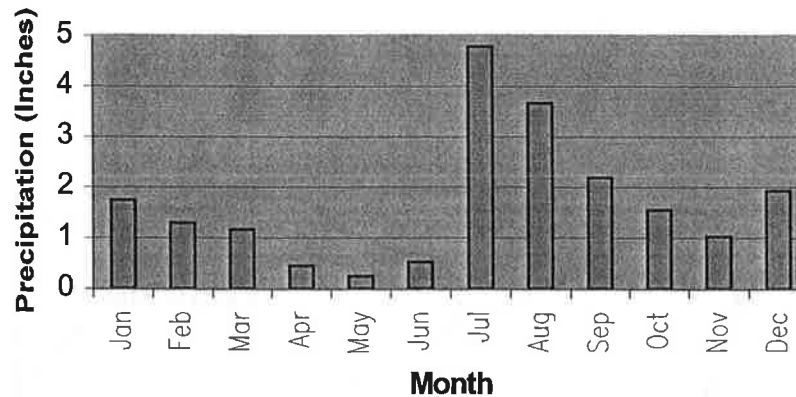


Figure III-2. Precipitation data, 1961-1990, Coronado National Memorial, Cochise County, Arizona.

Soils

Soils on the Memorial are variable with soil depths ranging from less than 20 inches on the steeper slopes to greater than 60 inches on the lower slopes. Soils are typically high in rock fragments. Gravelly sandy loams are the most frequently encountered surface and subsurface textures. Other textures present include sandy loam, coarse sandy loam, clay loam and gravelly clay. Erosion potentials range to high and should be of concern with regard to grazing. This is compounded by soils that have rapid runoff potentials and low available water capacity. For a more detailed description of soils, see Richardson et al. (1979), Ruffner and Johnson (1991), Ogden (1995), Denny and Peacock (1996).

Watershed

Several ephemeral streams drain to the southeast in this allotment. Joe's Spring Allotment drains into both Montezuma Canyon and directly to the San Pedro River in the United States. Drainages of Montezuma Canyon run into Mexico before draining into the San Pedro River. The NPS has the responsibility to administer their lands so that water from these lands meet Federal and State clean water standards, as enforced by the Arizona Department of Environmental Quality (ADEQ) and mandated by the Clean Water Act.

Vegetation

Three vegetation mapping efforts (Ogden 1995, Anable 1993, Ruffner and Johnson 1991) have been conducted at Coronado National Memorial in recent years. Additionally, occurrence of plant species is described in Parfitt and Christy (1992), which provides a detailed listing of over 580 plant species collected at Coronado National Memorial and housed at the Arizona State University.

Three plant associations were identified in the Joe's Spring Allotment by Ruffner and Johnson (1991) as described by Brown et al. (1979). The associations are *Quercus* spp.-*Pinus discolor-Juniperus* spp. Association (QPJ), *Bouteloua* spp. Mixed Grass-Mixed Shrub Association (BMM), and *Prosopis glandulosa*-Mixed Short Tree Association (PMT). QPJ is the most common plant association present in this allotment. Lehman lovegrass (*Eragrostis lehmanniana*), blue grama (*Bouteloua gracilis*), fairy duster (*Calliandra eriophylla*), and buckwheat (*Eriogonum wrightii*) were the most common plant species observed by Ruffner and Johnson (1991) at lower elevations. Emory Oak (*Quercus emoryi*), Lehman lovegrass and tick clover (*Desmodium rosei*) were common at higher elevations.

Range sites were mapped and described in Anable (1993). A more detailed range inventory conducted by the University of Arizona's Student Chapter of the Society for Range Management (Ogden 1995) lists two vegetation types and seven range sites mapped on this allotment during the fall of 1994. Oak Woodland and Desert Grassland Vegetation types were observed on this allotment. The most common range site present was Shallow Hills 16-20" PZ. Sandyloam Upland QUEM, QUAR, QUOB 16-20" PZ, Loamy Upland 16-20" PZ, Loamy Upland 16-20" PZ, Limestone Hills 16-20" PZ, and Shallow Hills 20-23" PZ are also present. Results of Anable (1993) and Ogden (1995) were combined to produce the units shown in Table III-1 and the map in Figure III-3. Riparian units were also added, but need further refinement and definition. Table III-2 summarizes the ecological sites present in this allotment and relates ecological sites (including Natural Resource Conservation Service (NRCS) ecological site number) with plant associations mapped at the Memorial.

Other common plant species in this allotment are plains lovegrass (*Eragrostis intermedia*), sideoats grama (*Bouteloua curtipendula*), tanglehead (*Heteropogon contortus*), sprucetop grama (*Bouteloua chondrosioides*), and cane beardgrass (*Bothriochloa barbinodis*). False mesquite (*Calliandra eriophylla*), agave (*Agave* spp.), and manzanita (*Arctostaphylos* spp.) are common shrubs and trees.

Table III-1. Mapping units present on the Joe's Spring Allotment, Coronado National Memorial, Cochise County, Arizona. Modified from Denny and Peacock (in press).

Map Unit	Soils	Ecological Site	Acres	
3	Canquya-Rock Outcrop	Shallow Hills 20-23" QUEM, QUAR, JUDE 20-23" 24	0	
4	Canquya-Rock Outcrop	Shallow Hills 20-23" QUEM, QUAR, JUDE 20-23" 24	0	
9	Gardencan	Sandyloam Upland QUEM, QUAR, QUOB 16-20" 175	0	
10	Gardencan-Lanque	Sandyloam Upland 16-20"	115	0
11	Gardencan-Terrarossa	Sandyloam Upland 16-20"/Loamy Upland 16-20"	165	0/6
15	Kinockity-Budlamp	Shallow Hills 16-20"	290	6
16	Lutzcan-Yarbam	Shallow Hills 16-20"/Limestone Hills 16-20"	216	6
17	Montcan-Amuzet	Sandy Bottom 16-20"	36	6
18	Morgamine-Yaquican	Mountains QUHY, QUAR 23-25"	22	0
19	Kinockity	Shallow Hills 16-20"	77	6
20	Yabamar-Bothompeek	Shallow Hills 16-20"	336	6
Total Acres			1480	

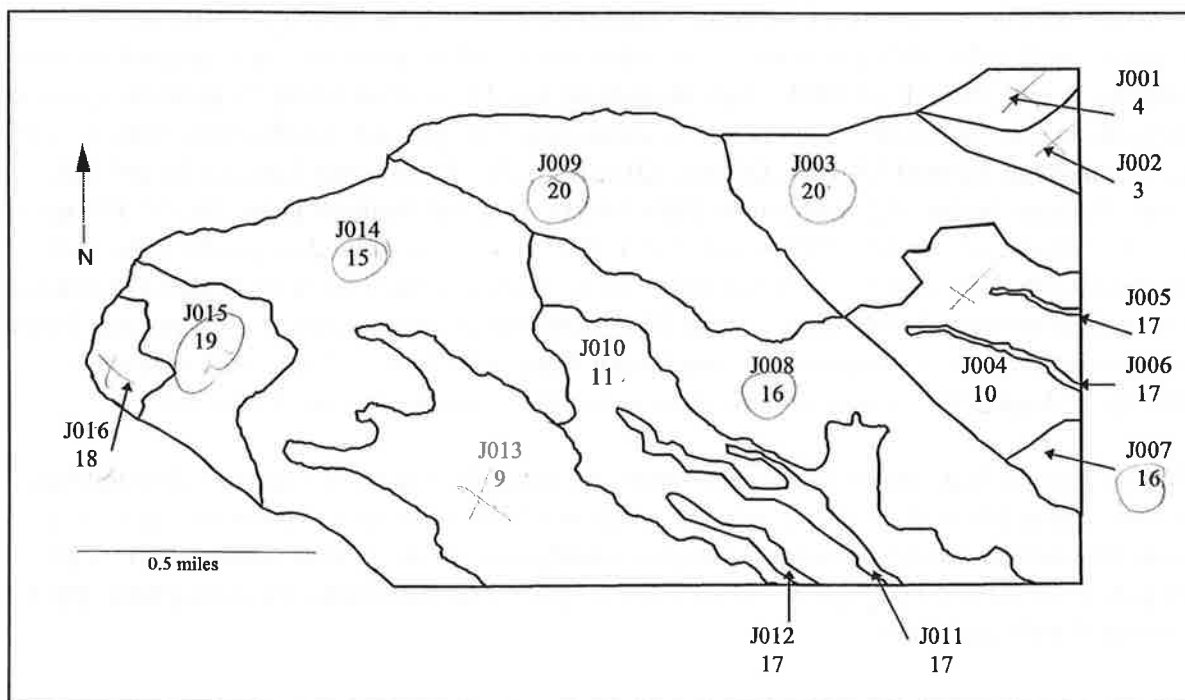


Figure III-3. Location of numbered site write-up areas (top) and map units (bottom) within the Joe's Spring Allotment, Coronado National Memorial, Cochise County, Arizona.

Table III-2. Ecological sites correlated with plant associations, Coronado National Memorial, Cochise County, Arizona.

Ecological Site/Precip.Zone (inches)	NRCS Site Number	Correlated Plant Association
Shallow Hills 16-20"	041XA102AZ	<i>Bouteloua</i> spp. Mixed Grass-Mixed Shrub
Limestone Hills 16-20"	041XA103AZ	<i>Bouteloua</i> spp. Mixed Grass-Mixed Shrub
Loamy Hills 16-20"	041XA107AZ	<i>Quercus</i> spp.- <i>Pinus discolor-Juniperus</i> spp.
Loamy Upland 16-20"	041XA108AZ	<i>Bouteloua</i> spp. Mixed Grass-Mixed Shrub
Sandyloam Upland 16-20"	041XA110AZ	<i>Quercus</i> spp.- <i>Pinus discolor-Juniperus</i> spp.
Sandy Bottom QUEM, QUAR 16-20"	041XA112AZ	<i>Prosopis glandulosa</i> -Mixed Short Tree
Sandyloam Upland QUEM, QUAR, QUOB	041XA118AZ	<i>Quercus</i> spp.- <i>Pinus discolor-Juniperus</i> spp.
Shallow Hills QUEM, QUAR, JUDE 20-23"	041XA120AZ	<i>Quercus</i> spp.- <i>Pinus discolor-Juniperus</i> spp.
Mountains QUHY, QUAR 23-25"	041XA130AZ	<i>Quercus</i> spp.- <i>Pinus discolor-Juniperus</i> spp.

Wildlife

Many wildlife species inhabit the allotments. Recent inventories of the vertebrate fauna have identified 29 reptile and 7 amphibian species, 11 bat and 40 terrestrial mammal species and 190 bird species as occurring on the Memorial (Cockrum et al. 1979, Swann et al. 1998 and unpublished Memorial observation data), though not all species will be found in the allotments. Another 50+ species of vertebrates were considered as probable or extinct. Common bird species include hummingbirds, warblers, wrens, sparrows and a great diversity of other birds. Acorn woodpeckers (*Melanerpes formicivorus*) are abundant in oak dominated areas. Raptorial species, including red-tailed hawks (*Buteo jamaicensis*), Cooper's hawks (*Accipiter cooperii*), and American kestrels (*Falco sparverius*) are present, though not considered common due to the low number of observations recorded in the Memorial.

Sensitive Species

Several status species of wildlife from federal or state threatened and endangered lists, or proposed for listing, are known to occur or may occur in this area. Among these are lesser long-nosed bats, Mexican long-tongued bats, Mexican spotted owls and loggerhead shrikes (Table III-3). Several studies aimed at establishing a comprehensive inventory of wildlife species and their distribution in the Memorial are currently underway or have recently been completed. There are no known sensitive plant species in this allotment.

Cultural Resources

There are several known cultural resources in this allotment. Several lithic scatter sites have been located, as well as many tool fragments suggesting that the area may have been used as base camps or smaller working camps by early inhabitants of the region. Grazing can adversely effect cultural resources by breakage, reducing visibility and displacement of artifacts (Osborn and Hartley 1993).

Table III-3. Status species occurring or thought to occur at Coronado National Memorial, Cochise County, Arizona.

Common Name	Scientific Name	Federal Status	State Status	CORO Status
Lesser Long-nosed Bat	<i>Leptonycteris curasoae</i>	Endangered	WC	Present
Mexican Long-tongued Bat	<i>Choeronycteris mexicana</i>	Species of Concern	WC	Present
Barking Frog	<i>Hylactophryne augusti</i>	No Status	WC	Present
Loggerhead Shrike	<i>Lanius ludovicianus</i>	Species of Concern	No Status	Present
Elegant Trogon	<i>Trogon elegans</i>	No Status	WC	Present
Mexican Spotted Owl	<i>Strix occidentalis lucida</i>	Threatened	WC	Present
Peregrine Falcon	<i>Falco peregrinus</i>	Endangered	WC	Present
Arizona Shrew	<i>Sorex arizonae</i>	Species of Concern	WC	Historic
Black-tailed prairie dog	<i>Cynomys ludovicianus</i>	No Status	WC	Historic
Ocelot	<i>Felis pardalis</i>	Endangered	WC	Historic
Jaguarundi	<i>Felis yagouaroundi</i>	Endangered	No Status	Historic
Jaguar	<i>Panthera onca</i>	Endangered	WC	Historic
Mexican Grey Wolf	<i>Canis lupus baileyi</i>	Endangered	WC	Historic

WC - wildlife of special concern in Arizona

Recreation

The majority of visitors come to visit the higher elevation sites of the Memorial. The grazed portion of the Memorial currently receives little in the way of recreational use; however, use is increasing because of visitor interest to explore, see and hike more of the Memorial. Visitation in 1999 was 89,691 compared with 47,825 in 1981. This trend is expected to continue due to increases in local population size, urban expansion and development of other local tourist attractions. Local development is occurring and will increase recreation in this area of the park.

GRAZING MANAGEMENT

National Park Service Policies

NPS Management Policies (1988) state that "Livestock or trail stock will be kept within the carrying capacity of the area to be grazed so the composition, condition, and distribution of native plant and animal communities and ecosystem dynamics are not significantly altered...no facilities or range developments such as fences, corrals, or water developments, other than those authorized by law or approved for NPS use or concession use, will be allowed in parks to increase livestock numbers or to introduce livestock into areas where they cannot otherwise exist. The National Park Service will not expend funds to construct or maintain commercial livestock facilities unless there is a direct benefit to the protection of park resources. The grazing permittee will be required to remove such facilities when grazing activities are no longer authorized."

Further direction to the Management Policies is provided in NPS-77 Natural Resource Management Guideline (1991) and NPS-53 Special Park Uses Guideline (1998), which provides program guidance, identifies resources objectives, and states the role and responsibilities of the NPS. For all parks with grazing, NPS-77 requires grazing management plans that reflect NPS management objectives. Park ecosystems are frequently unique or significantly different from those for which most grazing systems have been developed. Therefore, grazing plans designed for use in non-park areas may not be acceptable for use on NPS lands. For example, most grazing systems have been developed for multiple-use lands. Therefore, they may place a greater emphasis on benefits for animal production than would be appropriate for park areas. NPS policy regarding special use permits and fees can be found in NPS-53 Special Park Uses Guideline. NPS-53 contains detailed instructions pertaining to special park uses and permits procedures.

Objectives

The following are objectives for the management of livestock on the Joe's Spring Allotment.

- Maintain or improve all native plant communities through livestock distribution, use of a grazing system that includes rest of pastures, and adjusting number of livestock to fit the carrying capacity of the allotment.
- Limit livestock utilization to no more than 40 percent use annually by improving distribution or bringing stocking into balance with allowable use.
- Make all new range structures, including fences and water developments to the standards outlined in the special use permit.
- Bring existing range structures up to the standards included in the special use permit by the year 2001.
- Maintain suitable habitat to support all wildlife including nectar-feeding bats.
- Decrease erosion factors including the amount of bare ground present and increase cover of native perennial plants
- Input range data into computer databases and geographic information system.
- Establish plots and conduct vegetation sampling and grazing utilization analysis to document short and long-term effects of livestock use. Included here is the installation of small exclosures (less than 1 acre) within the pasture. Integrate monitoring data from other resource management programs to make sound management decisions.
- Continue to refine vegetation mapping and ecological assessments for areas within this allotment, especially riparian areas. Soil mapping efforts completed in 1996 will facilitate this effort.

Coordination and Responsibilities

The following provides an avenue for coordination between the permittee and the National Park Service and defines responsibilities for the permittee and park staff.

- All final decisions will be the responsibility of the superintendent, Coronado National Memorial.

- Grazing management will be done jointly by personnel of Coronado National Memorial; personnel from the Southern Arizona Office, Division of Resources Management; and the permittee.
- Supervision of livestock will be the responsibility of the permittee.
- Except in emergency cases, changes in the operation by any party will be done only with notice issued by the superintendent.
- All grazing development designs (i.e. fences and water developments) need approval of the superintendent 90 days before project start dates. Most modifications will require clearances through the National Historic Preservation Act and the National Environmental Protection Act. Water development (both proper installation and maintenance) will be the responsibility of the permittee. Water rights are retained by the National Park Service.
- With the exception of Coronado National Memorial boundaries, all fencing costs for installation and maintenance will be the responsibility of the permittee.
- Use of pesticide (for livestock use only) or supplemental feed must be requested with 30 days prior approval in writing from the superintendent.
- The permittee will be responsible for removing trespass livestock. Livestock not removed from unauthorized areas within five days of notification will result in cancellation of the grazing permit, issuance of violation notices, and possibly confiscation of livestock.
- Vegetation monitoring will be the responsibility of agency (NPS or USFS) personnel. The permittee will be notified 30 days before monitoring and will be given the opportunity to be present for monitoring.
- Due to possible conflicts with recreation, the grazing permit for this allotment will not be considered automatically transferable in the event of ownership changes in the base property. Qualifications of the applicant and intent of the grazing program will need to be presented in writing to the superintendent before the permit is transferred.
- The agencies (NPS and USFS) will be responsible for sensitive species protection and management in the allotment. In situations where livestock are determined to be negatively affecting sensitive species, the agencies may suspend or eliminate livestock use from all or portions of the allotment.

Allotment and Pasture

The Joe's Spring Allotment consists of one pasture that is approximately 1480 acres. The allotment has been delineated into site write-up areas (SWAs), which is the smallest geographical unit used as a base to collect vegetation data. A SWA may consist of one ecological site (range, woodland or other) or a portion of a site if more than one seral stage is present. It may contain more than one community type where soil-vegetation complexes occur and are intermingled in such a way that they cannot be individually delineated. SWAs are analogous to a habitat type and are a unique combination of pasture, soils and vegetation within the allotment.

In rating the ecological condition of sites, existing vegetation is compared to the potential natural community (PNC) described by the Natural Resources Conservation Service (NRCS). NRCS publishes defined sites in ecological site or range site guides. Site guides contain the data to make an estimate of the ecological condition based on the present plant community.

Existing plants are inventoried and a comparison is made between existing and potential vegetation. Site guides also contain data for recommended stocking rates. Potential natural community is defined as the biotic community that would become established if all successional sequences were completed without interference by humans under the present environmental conditions (Society for Range Management 1989). In addition to PNC, the other classes are early, mid, and late seral. Range condition is computed as a number between 0 and 100, representing the percentage of potential vegetation. Ratings of 0 to 25 will be considered early seral, 26 to 50 as mid seral, and 51 to 75 as late seral. Scores above 75 are classified as PNC.

SWAs delineated for this allotment are shown in Figure III-3. Range condition for the sites were measured by Ogden (1995) and Anable (1993). In summary, range condition of the allotment was determined to be mid seral (MID) on the lower slopes and PNC on the upper slopes. See Table III-4 for the range condition for each SWA in the allotment. Sites not rated are riparian areas that have not been formally mapped and quantified.

Forage and browse utilization data for the allotment was gathered in 1989 by the USFS. The utilization on the lower slopes was 30 to 65 percent, and nearly 0 percent above 5800 feet in elevation, except near the upper stock tank (Figure III-4). Visual inspection of the allotment in 1995 and 1996 showed a similar pattern except that utilization in the southern portion was more than 60 percent on the lower slopes (L. Benson, per. obs.).

Current animal unit months (AUM) is 432 for the Joe's Spring Allotment. The carrying capacity for this allotment was determined considering range condition, slope, and ecological site. The revised AUM for this allotment will be 214. A stocking rate of four acres per AUM was used on the lower slopes. Stocking rates were taken from NRCS site guides and divided into acres in each SWA to compute AUM as shown in Table III-4. No AUMs were given for riparian areas as an approach to limit use of these sensitive sites. Moderate slopes were given a stocking rate of roughly four times the rate for lower slopes due to the steep nature of the terrain and the limited cattle use that it receives. Areas of extreme slope were not allocated AUM due to no-use of these areas. This moderate approach was used due to the conditions present on site, the long-term period in which the allotment has been grazed without rest, and management policies of the NPS. Because this is a substantial reduction from the current allocation, AUM will be reduced by 54 AUM annually (except during years of rest) until the level reaches 214 AUM. Therefore, the AUM allocated is 378 for fiscal year (FY) 2001 (begins October 2000), 324 for FY 2002, rest in FY 2003, 270 for FY 2004, and 214 for FY 2005. This reduction in AUM is needed to allow the allotment to recover from long-term use. This moderate approach should keep utilization below 40 percent. The reduction will benefit native plant and wildlife species that inhabit the area.

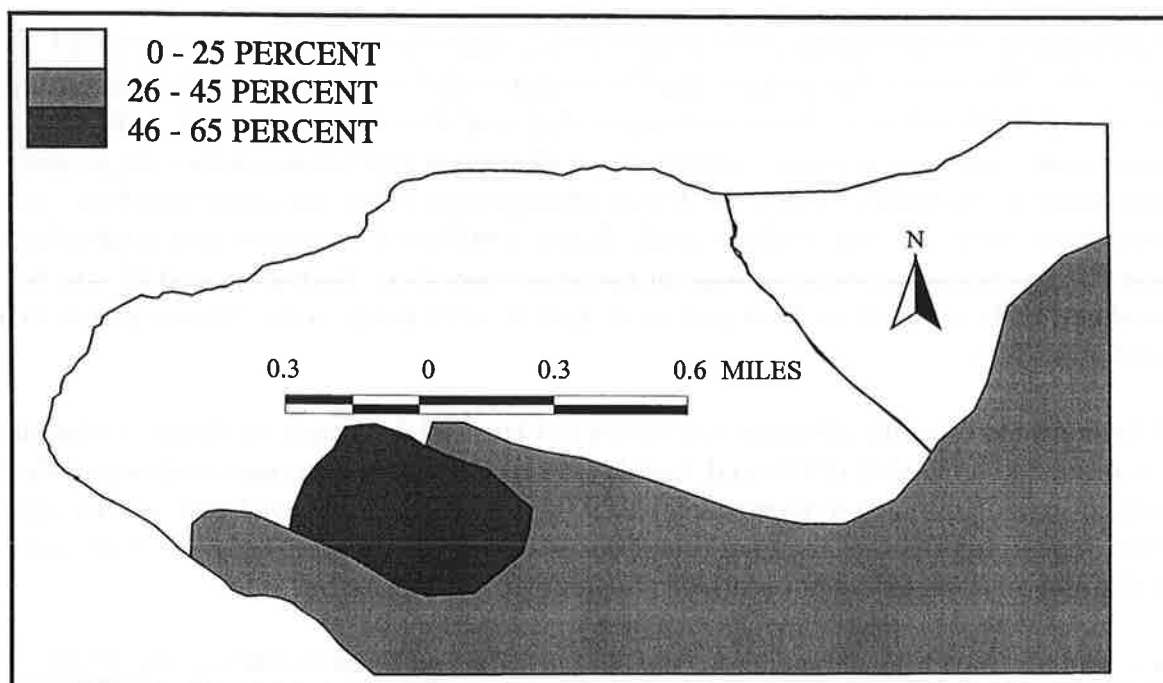


Figure III-4. Livestock utilization, 1989, Joe's Spring Allotment, Coronado National Memorial, Cochise County, Arizona.

Table III-4. Site write-up areas within the Joe's Spring Allotment, Coronado National Memorial, Cochise County, Arizona.

SWA NUMBER	MAP UNIT	RANGE CONDITION ¹	ACRES	STOCKING RATE ²	AUM
J001	4	Not Rated	24	15	2
J002	3	Not Rated	24	15	2
J003	20	Not Rated	153	15	0
J004	10	Not Rated	115	4	30
J005	17	Not Rated	2	0	0
J006	17	Not Rated	4	0	0
J007	16	Not Rated	15	4	4
J008	16	MID	200	4	50
J009	20	PNC	183	15	12
J010	11	MID	21	4	41
J011	17	Not Rated	21	0	0
J012	17	Not Rated	8	0	0
J013	9	MID	175	4	44
J014	15	PNC	291	15	19
J015	19	PNC	77	0	0
J016	18	PNC	21	0	0
Total			1,443		214

¹PNC - Potential Natural Community, MID - mid seral

²Acres per AUM

Ongoing Research

Research is currently being conducted to establish pollen and nectar-feeding bat use of the agaves and assess population dynamics and habitat needs of the endangered bat species using the Memorial. These investigations are intended to study the phenology of the agaves, assess flower, fruit and seed production, assess the current incidence of damage to individuals and flower stalks, and set up a series of permanent stations that are appropriate for use as long-term agave monitoring stations. Another study is looking at the species of bats present in the Memorial and use of agave species by nectar-feeding bats.

Grazing Schedule

Livestock will be allowed to enter the pasture on October 15, provided conditions are favorable for grazing. They will be removed from the pasture no later than March 15, or when utilization reaches 40 percent on the lower portions of the allotment. The pasture will be rested every third year to simulate a standard three-pasture rest rotation system. For the years of 2001 through 2007, rest periods will begin in October 2002 (FY 2003) and October 2005 (FY 2006). Holechek (1983) reported that three-pasture rest rotation grazing was found to have good results in southern Arizona. This situation is somewhat different in that only one pasture is available for grazing; if vegetative response is limited, consecutive seasons of rest may be considered. A grazing system that allows for rest of the pasture will benefit the native plant species by allowing increased seed production and germination. Increased litter deposition will add nutrients to the soil and provide germination sites for native plants.

Vegetation Monitoring

Vegetation monitoring will consist of plant sampling prior to livestock entering the allotment, inspection of the pasture during the grazing season, and plant utilization sampling after livestock are removed. Sampling will determine if the pasture is in suitable condition for grazing to begin, defined as average or greater production of grasses and forbs during periods of average or greater annual precipitation. Criteria for denying grazing or terminating grazing for the season will include 1) drought conditions, 2) recent wildland fires, 3) presence of threatened or endangered wildlife or plant species, or critical habitat for these species, that will be harmed from competition with livestock for resources or space, and 4) management or research activities that will be compromised by livestock.

Prior to (in September) the grazing period, park staff will conduct vegetation analysis consisting of quadrat sampling for plant frequency, species composition by the dry-weight rank method, density of special interest species with sampling by belt transects, and reading photo-trend plots (Ruyle 1987, Bureau of Land Management 1985). Exclosures less than one acre have been installed and sampled as paired plots (grazed and ungrazed). During the grazing season the allotment will be inspected monthly by ocular estimates using the Grazed-Class Method for utilization sampling (Schmutz 1978). Utilization will not be allowed to exceed 40 percent at key sampling sites. Sampling sites will be chosen to include the major vegetation types present and important riparian areas.

Grazing Developments

Existing

There are three types of developments in this allotment; fences (including a corral), a spring, and a water well (Figure III-5). A new boundary fence exists on the eastern side of the allotment. Fence construction will follow wildlife standards including proper spacing and the use of smooth strands on the top and bottom wires. Boundary fences are the responsibility of the park to maintain. The boundary fence was replaced in 1996 and is in excellent condition. There is a 2.4-mile section of fence on the south side of the allotment, which is in moderate condition, but does not meet wildlife standards. This fence is the responsibility of the permittee to maintain. The steep escarpments on the west and north sides of the allotment provide a natural barrier to livestock movements.

The Joe's Spring Allotment well is currently the main source of water for livestock. Brown's Spring, which feeds water through a $\frac{1}{4}$ -mile pipe to a watering tank, is functional and can be used to alleviate grazing pressure on the lower portions of the allotment. The upper water source should be used primarily in the first two to three months of the grazing period. The lower well will be closed during this period. The upper trough is in need of repair. Run-off from this trough has created an artificial wetland. Efforts must be taken to return excess water to a natural drainage. Before 1989, another spring was located near the western edge of the allotment, but has been covered by a landslide after heavy rains in 1988. It is not shown in Figure III-5.

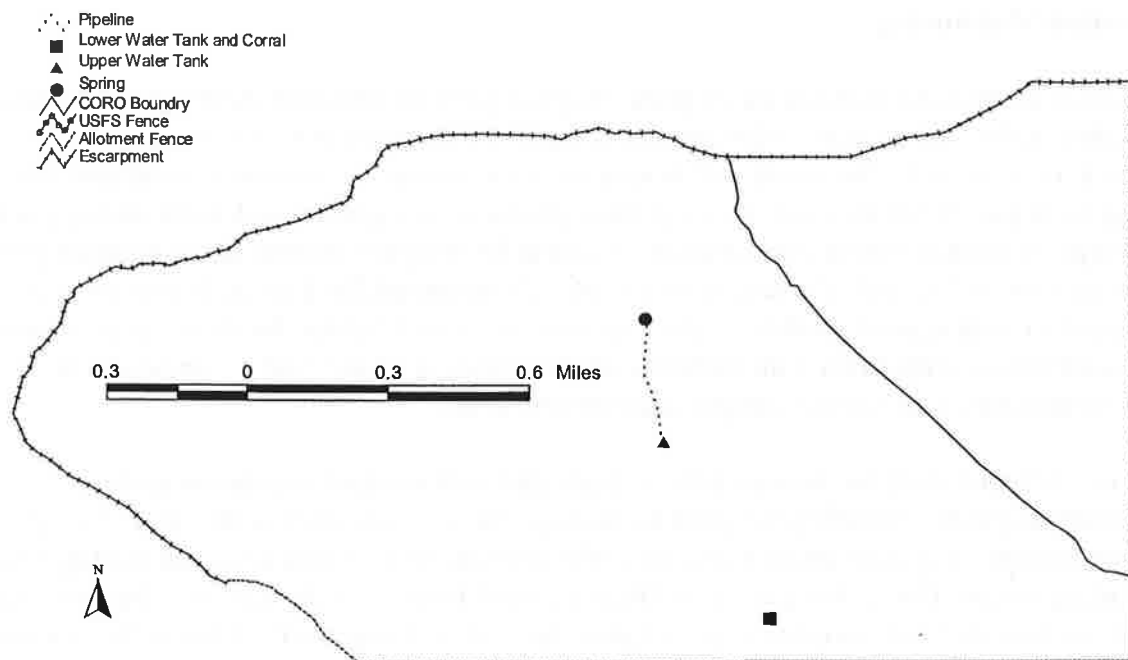


Figure III-5. Fences and locations of water wells in the Joe's Spring Allotment, Coronado National Memorial, Cochise County, Arizona.

Required to Permit Grazing

1. Inspect the southern boundary fence, make repairs as needed. Fence sections needing replacement should be made to conform to wildlife standards. See the special use permit for details on fence standards (Appendix I-3).
2. Repair water leakage at upper water trough and re-route run-off to the natural drainage.
3. Install wildlife escape ramps in water troughs.

AGREEMENT

We, the undersigned, hereby agree to this Allotment Management Plan for the Joe's Spring Allotment. This plan may be modified if data from range and other studies indicate changes are necessary.

Permittee, Joe's Spring Allotment

Date

Superintendent, Coronado National Memorial

Date**LITERATURE CITED**

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Montezuma Allotment Management Plan

Coronado National Memorial

Cochise County

Arizona

March 2000

INTRODUCTION

The Memorial was created from United States Forest Service (USFS) and private lands on which cattle grazing has occurred since about 1900. When established, the 1952 legislation authorized livestock grazing on allotments "within the Memorial area to the extent now permitted within the said area when such grazing will not interfere with recreational development authorized by this Act." In 1978, as a result of a land exchange with the USFS, the boundary changed and the Memorial acquired one more allotment (Joe's Spring) for a total of four allotments. Until 1992, the allotments were administered and managed by the USFS under a Memorandum of Understanding (MOU) with the National Park Service (NPS).

The NPS is responsible for administering and managing the cattle use and permits within the park boundaries. The Memorial began directly administering the allotments in 1992 when the MOU expired. In 1994, the University of Arizona School of Renewable Natural Resources was contracted to prepare a report on range condition and grazing management alternatives to guide resources management concerns of the NPS with the grazing operations.

Since the NPS acquired the land in 1980 the base property and grazing permit for the Montezuma Allotment have changed ownership four times, most recently in 1994. This allotment has not been stocked since February 1990.

While the enabling legislation allows grazing to continue at the Memorial, the topic has been raised as to the conflicts that exist between the mission of the NPS and the potentially detrimental effects of grazing upon the landscape. Two of the original allotments were willingly and permanently retired within the Memorial by the permittee in 1990, portions of these allotments with Coronado National Forest are still active. The NPS will work towards permanently retiring the remaining allotments as opportunities arise to do so through mutual agreement with the permittees. Until this can be accomplished, this plan will serve to moderate the impacts of grazing. **This plan includes changes in dates of grazing and forage allocation that have not yet had public review; they are subject to change pending a formal decision by the NPS.**

GENERAL INFORMATION

The Memorial is located about 20 miles south of Sierra Vista in Cochise County in southeastern Arizona (Figure IV-1). It covers 4,750 acres and lies on the Mexican border. The Huachuca Mountains originate near the Memorial and extend north for some 30 miles. To the east lies a vast expanse of grasslands and the San Pedro River.

The southern boundary of the Montezuma Allotment is the United States/Mexico International Border. The western boundary is a barbed wire fence extending to a natural barrier of steep slopes which provides the balance of the western boundary. The eastern boundary is coincidental with the eastern boundary for Coronado National Memorial. The northern boundary is partially fenced. The allotment covers 668 acres of the Memorial.

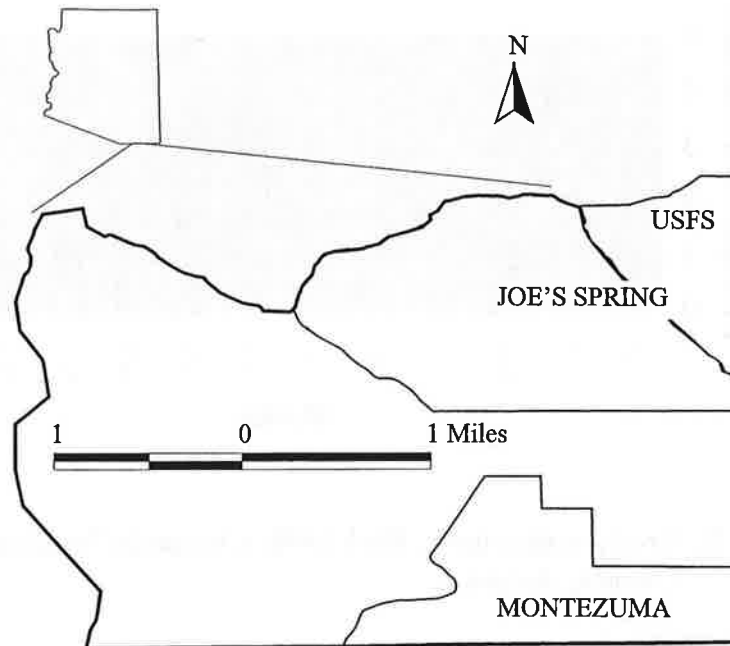


Figure IV-1. Boundary of Coronado National Memorial (in bold), Cochise County, Arizona. Grazing allotments labeled, Montezuma Allotment to the south and Joe's Spring Allotment to the north. The USFS portion of Joe's Spring Allotment is also identified.

RESOURCE DATA

Elevation and Topography

Elevations range from 4,850 to 5,600 feet within the allotment. The allotment is composed primarily of nearly flat aspects on the eastern side grading into steep slopes to the west. Aspects are primarily eastern and southern. Slopes range from less than 5 percent to more than 30 percent. More than one-half of the allotment has slopes less than 10 percent. Less than one-fourth of the allotment is made up of sloped areas over 30 percent.

Climate

Average yearly precipitation ranges from 10 to 30 inches with a mean of 21 inches. Approximately 40% of the precipitation in this area falls during the summer "monsoons" in July and August, and about one-quarter falls as rain and snow during the winter months, December through February. Normal temperatures range from 50 to 90°F during the summer and 30 to 50°F during the winter months. Figure III-2 displays a 30-year average (1961-1990) of precipitation data collected at the Memorial.

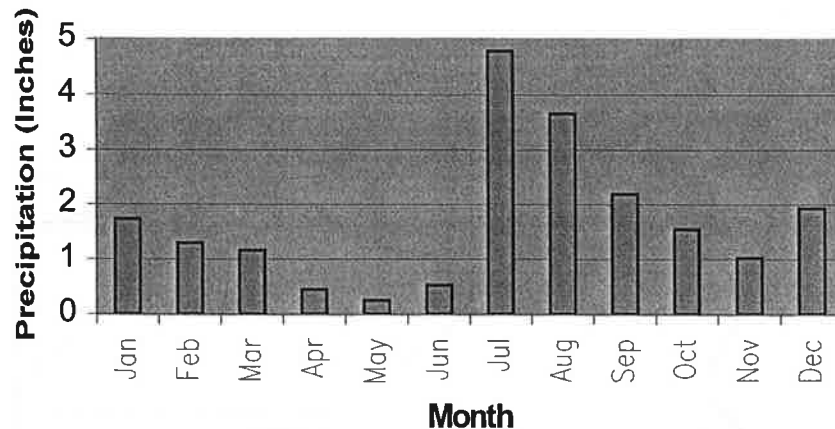


Figure III-2. Precipitation data, 1961-1990, Coronado National Memorial, Cochise County, Arizona.

Soils

Soils on the Memorial are variable with soil depths ranging from less than 20 inches on the steeper slopes to greater than 60 inches on the lower slopes. Sandy and gravelly loams are the most frequently encountered surface and subsurface textures. Erosion potentials range to high and should be of concern with regard to grazing. This is compounded by soils that have rapid runoff potentials and low available water holding capacity. For a more detailed description of soils, see Richardson et al. (1979), Ruffner and Johnson (1991), Ogden (1995), and Denny and Peacock (1996).

Watershed

Several intermittent streams drain to the southeast in this allotment. Montezuma Allotment drains into both Montezuma Canyon and directly to the San Pedro River in the United States. Drainages of Montezuma Canyon run into Mexico before draining into the San Pedro River. The NPS has the responsibility to administer their lands so that water from these lands meet Federal and State clean water standards as enforced by the Arizona Department of Environmental Quality (ADEQ) and the Clean Water Act.

Vegetation

Three vegetation-mapping efforts have been conducted at Coronado National Memorial in recent years (Ruffner and Johnson 1991, Anable 1993, Ogden 1995). Additionally, occurrence of plant species is described in Parfitt and Christy (1992), which provides a detailed listing of over 580 plant species collected at Coronado National Memorial and housed at the Arizona State University.

Four plant associations were described by Ruffner and Johnson (1991) as described by Brown et al. (1979). The four associations are *Quercus* spp.-*Pinus discolor-Juniperus* spp. Association (QPJ), *Bouteloua* spp. Mixed Grass-Mixed Shrub Association (BMM), *Platanus* spp.-*Juglans* spp.-*Quercus* spp. Association (PJQ), and *Prosopis glandulosa*-Mixed Short Tree Association (PMT). BMM is the most common plant association present in this allotment. Lehman lovegrass and blue grama were the most common plant species observed by Ruffner and Johnson (1991).

Range sites were mapped and described in Anable (1993). A more detailed range inventory conducted by the University of Arizona's Student Chapter of the Society for Range Management (Ogden 1995) lists two vegetation types and seven range sites mapped on this allotment during the fall of 1994. Oak Woodland and Desert Grassland Vegetation Types were observed on this allotment. The most common range sites present are Sandy Loam Upland 16-20" PZ, Loamy Upland 16-20" PZ, and Shallow Hills 16-20" PZ. Results of Anable (1993) and Ogden (1995) were combined to produce the units shown in Table IV-1 and the map in Figure IV-3. Riparian units were also added, but need further refinement and definition.

Table IV-1. Mapping units present on the Montezuma Allotment, Coronado National Memorial, Cochise County, Arizona. Modified from Ogden (1995).

Map Unit	Soils	Ecological Site	Acres
2	Budlamp-Kinockity-Riverwash	Shallow Hills 16-20"	8
3	Canquya-Rock Outcrop	Shallow Hills QUEM, QUAR, JUDE 20-23"	23
6	Canquya -Rock Outcrop	Shallow Hills QUEM, QUAR, JUDE 20-23"	52
7	Coppercan-Cabquya	Shallow Hills 16-20"	77
8	Coppercan-Yarbam-Rock Outcrop	Shallow Upland 16-20"/Limy Upland 16-20"	123
9	Gardencan	Sandyloam Upland QUAR, QUEM, QUOB 16-20"	15
10	Gardencan-Lanque	Sandyloam Upland 16-20"	104
11	Gardencan-Terrarossa	Sandy Loam Upland 16-20"/Loamy Upland 16-20"	220
17	Montcan-Amuzet-Riverwash	Sandy Bottom 16-20"	46
Total Acres			668

Common plant species in this allotment are Lehman lovegrass (*Eragrostis lehmanniana*), blue grama (*Bouteloua gracilis*), plains lovegrass (*Eragrostis intermedia*), sideoats grama (*Bouteloua curtipendula*), sprucetop grama (*Bouteloua chondrosioides*), and cane beardgrass (*Bothriochloa barbinodis*). False mesquite (*Calliandra eriophylla*), agave (*Agave* spp.), mesquite (*Prosopis glandulosa*), desert broom (*Baccharis sarothroides*), and oaks (*Quercus* spp.) are common shrub, shrub-like, and tree species. Table IV-2 summarizes the ecological sites present in this allotment and relates ecological sites (including Natural Resource Conservation Service (NRCS) ecological site number) with plant associations mapped at the Memorial.

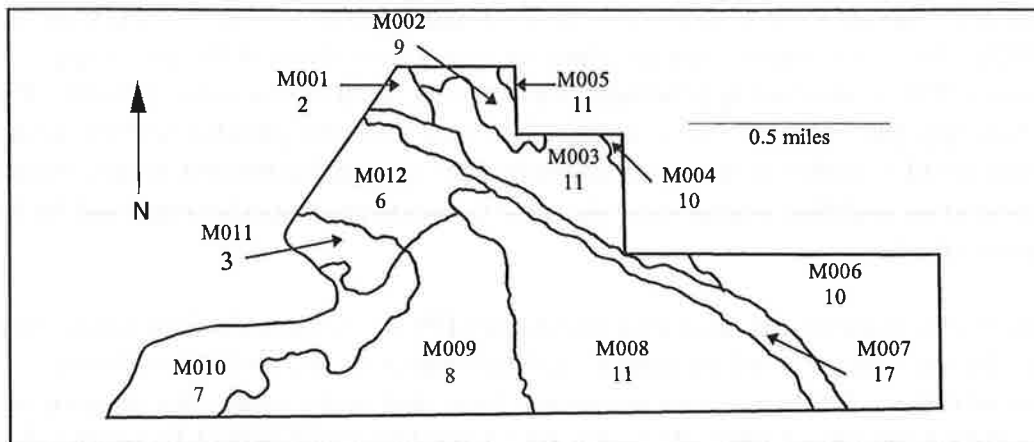


Figure IV-3. Location of numbered site write-up areas (top) and map units (bottom) within the Montezuma Allotment, Coronado National Memorial, Cochise County, Arizona.

Table IV-2. Ecological sites correlated with plant associations, Coronado National Memorial, Cochise County, Arizona.

Ecological Site/Precip.Zone (inches)	NRCS Site Number	Plant Association
Shallow Hills 16-20"	041XA102AZ	<i>Bouteloua</i> spp. Mixed Grass-Mixed Shrub
Limy Upland 16-20"	041XA105AZ	<i>Bouteloua</i> spp. Mixed Grass-Mixed Shrub
Loamy Upland 16-20"	041XA108AZ	<i>Bouteloua</i> spp. Mixed Grass-Mixed Shrub
Sandyloam Upland 16-20"	041XA110AZ	<i>Bouteloua</i> spp. Mixed Grass-Mixed Shrub
Sandy Bottom QUEM 16-20"	041XA112AZ	<i>Prosopis glandulosa</i> -Mixed Short Tree
Shallow Upland 16-20"	041XA117AZ	<i>Bouteloua</i> spp. Mixed Grass-Mixed Shrub
Sandyloam Upland QUEM, QUAR, QUOB 16-20"	041XA118AZ	<i>Quercus</i> spp.- <i>Pinus discolor</i> - <i>Juniperus</i> spp.
Shallow Hills QUEM, QUAR, JUDE 20-23"	041XA120AZ	<i>Quercus</i> spp.- <i>Pinus discolor</i> - <i>Juniperus</i> spp.

Wildlife

Many wildlife species inhabit the allotments. Recent inventories of the vertebrate fauna have identified 29 reptile and 7 amphibian species, 11 bat and 40 terrestrial mammal species, and 190 bird species as occurring on the Memorial (Cockrum et al. 1979, Swann et al. 1998 and unpublished Memorial observation data), though not all species will be found in the allotments. Another 50+ species of vertebrates were considered as probable or extinct. Common bird species include hummingbirds, warblers, wrens, sparrows and a great diversity of other birds. Acorn woodpeckers (*Melanerpes formicivorus*) are abundant in oak dominated areas. Raptorial species, including red-tailed hawks (*Buteo jamaicensis*), Cooper's hawks (*Accipiter cooperii*), and American kestrels (*Falco sparverius*) are present, though not considered common due to the low number of observations recorded in the Memorial.

Sensitive Species

Several status species of wildlife from federal or state threatened and endangered lists, or proposed for listing, are known to occur or may occur in this area. Among these are lesser long-nosed bats, Mexican long-tongued bats, Mexican spotted owls and loggerhead shrikes (Table IV-3). Several studies aimed at establishing a comprehensive inventory of wildlife species and their distribution in the Memorial are currently underway or have recently been completed. There are no known sensitive plant species in this allotment.

Table IV-3. Status species occurring or thought to occur at Coronado National Memorial, Cochise County, Arizona.

Common Name	Scientific Name	Federal Status	State Status	CORO Status
Lesser Long-nosed Bat	<i>Leptonycteris curasoae</i>	Endangered	WC	Present
Mexican Long-tongued Bat	<i>Choeronycteris mexicana</i>	Species of Concern	WC	Present
Barking Frog	<i>Hylactophryne augusti</i>	No Status	WC	Present
Loggerhead Shrike	<i>Lanius ludovicianus</i>	Species of Concern	No Status	Present
Elegant Trogon	<i>Trogon elegans</i>	No Status	WC	Present
Mexican Spotted Owl	<i>Strix occidentalis lucida</i>	Threatened	WC	Present
Peregrine Falcon	<i>Falco peregrinus</i>	Endangered	WC	Present
Arizona Shrew	<i>Sorex arizonae</i>	Species of Concern	WC	Historic
Black-tailed prairie dog	<i>Cynomys ludovicianus</i>	No Status	WC	Historic
Ocelot	<i>Felis pardalis</i>	Endangered	WC	Historic
Jaguarundi	<i>Felis yagouaroundi</i>	Endangered	No Status	Historic
Jaguar	<i>Panthera onca</i>	Endangered	WC	Historic
Mexican Grey Wolf	<i>Canis lupus baileyi</i>	Endangered	WC	Historic

WC - wildlife of special concern in Arizona

Cultural Resources

There are several known cultural resources in this allotment. Several lithic scatter sites have been located, as well as many tool fragments suggesting that the area may have been used as base camps or smaller working camps by early inhabitants of the region. Foundations of a historic ranching operation exist here and a graveyard has been fenced out. Grazing can adversely effect cultural resources by breakage, reducing visibility and displacement of artifacts (Osborn and Hartley 1993).

Recreation

The majority of visitors come to visit the higher elevation sites of the Memorial. The grassland portion of the Memorial currently receives little in the way of recreational use; however, use is increasing because of visitor interest to explore, see and hike more of the Memorial. Visitation in 1999 was 89,691 compared with 47,825 in 1981. This trend is expected to continue due to increases in local population size, urban expansion and development of other local tourist attractions. Local development is occurring and will increase recreation in this area of the park.

GRAZING MANAGEMENT

National Park Service Policies

NPS Management Policies (1988) state the "Livestock or trail stock will be kept within the carrying capacity of the area to be grazed so the composition, condition, and distribution of native plant and animal communities and ecosystem dynamics are not significantly altered...no facilities or range developments such as fences, corrals, or water developments, other than those authorized by law or approved for NPS use or concession use, will be allowed in parks to increase livestock numbers or to introduce livestock into areas where they cannot otherwise exist. The NPS will not expend funds to construct or maintain commercial livestock facilities unless there is a direct benefit to the protection of park resources. The grazing permittee will be required to remove such facilities when grazing activities are no longer authorized."

Further direction to the Management Policies is provided in NPS-77 Natural Resource Management Guideline (1991) and NPS-53 Special Park Uses Guideline (1998), which provides program guidance, identifies resources objectives, and states the role and responsibilities of the NPS. For all parks with grazing, NPS-77 requires grazing management plans that reflect NPS management objectives. Park ecosystems are frequently unique or significantly different from those for which most grazing systems have been developed. Therefore, grazing plans designed for use in non-park areas may not be acceptable for use on NPS lands. For example, most grazing systems have been developed for multiple-use lands. Therefore, they may place a greater emphasis on benefits for animal production than would be appropriate for park areas. NPS policy regarding special use permits and fees can be found in NPS-53 Special Park Uses Guideline. NPS-53 contains detailed instructions pertaining to special park uses and permits procedures.

Objectives

The following are objectives for the management of livestock on the Montezuma Allotment.

- Return plant communities to native desert grassland where this type has been altered, especially by the introduction of Lehman lovegrass. NPS requires the use of native species and varieties to maintain genetic integrity (NPS-77).
- Maintain or improve all plant communities through livestock distribution, use of a grazing system that includes rest of pastures, and adjusting number of livestock to fit the carrying capacity of the allotment.
- Limit livestock utilization to no more than 40 percent use annually by improving distribution or bringing stocking into balance with allowable use.
- Bring all range structures, including fences and water developments, up to standards included in the special use permit before grazing livestock.
- Maintain suitable habitat to support all wildlife and plant species.
- Input range data into computer databases and geographic information system.
- Establish plots and conduct vegetation sampling and grazing utilization analysis to document short and long-term effects of livestock use. Included here is the installation of

small enclosures (less than one acre) within the pasture. Integrate monitoring data from other resource management programs to make sound management decisions.

- Decrease erosion factors including the amount of bare ground present and increase cover of native perennial plants.
- Continue to refine vegetation mapping and ecological assessments for areas within this allotment, especially riparian areas. Soil mapping efforts completed in 1996 will facilitate this effort.

Coordination and Responsibilities

The following provides an avenue for coordination between the permittee and the National Park Service and defines responsibilities for the permittee and park staff.

- All final decisions will be the responsibility of the superintendent, Coronado National Memorial.
- Grazing management will be done jointly by personnel of Coronado National Memorial; personnel from the Southern Arizona Office, Division of Resources Management; and the permittee.
- Supervision of livestock will be the responsibility of the permittee.
- Except in emergency cases, changes in the operation by any party will be done only with notice issued by the superintendent.
- All grazing development designs (i.e. fences and water developments) need approval of the superintendent 90 days before project start dates. Most modifications will require clearances through the National Historic Preservation Act and the National Environmental Protection Act. Water development (both proper installation and maintenance) will be the responsibility of the permittee. Water rights are retained by the National Park Service.
- With the exception of Coronado National Memorial boundaries, all fencing costs for installation and maintenance will be the responsibility of the permittee.
- Use of pesticide (for livestock use only) or supplemental feed must be requested with 30 days prior approval in writing from the superintendent.
- The permittee will be responsible for removing trespass livestock. Livestock not removed from unauthorized areas within five days of notification will result in cancellation of the grazing permit, issuance of violation notices, and possibly confiscation of livestock.
- Vegetation monitoring will be the responsibility of NPS personnel. The permittee will be notified 30 days before monitoring and will be given the opportunity to be present for monitoring.
- The grazing permit for this allotment will not be considered automatically transferable in the event of ownership changes in the base property due to possible conflicts with recreation. Qualifications of the applicant and intent of the grazing program will need to be presented in writing to the superintendent before the permit is transferred.
- The NPS will be responsible for sensitive species protection and management in the allotment. In situations where livestock are determined to be negatively affecting sensitive species, the NPS may suspend or eliminate livestock use from all or portions of the allotment.

Ongoing Research

Research is currently being conducted to establish pollen and nectar-feeding bat use of the agaves and assess population dynamics and habitat needs of the endangered bat species using the Memorial. These investigations are intended to study the phenology of the agaves, assess flower, fruit and seed production, assess the current incidence of damage to individuals and flower stalks, and set up a series of permanent stations that are appropriate for use as long-term agave monitoring stations. Another study is looking at the species of bats present in the Memorial and use of agave species by nectar-feeding bats.

Grazing Schedule

Livestock will be allowed to enter the pasture on October 15 provided conditions are favorable for grazing and will be removed from the pasture no later than March 15 or if utilization reaches 40 percent on key areas. The pasture will be rested every third year. Non-use will continue through the spring of 2001. If active grazing resumes in fiscal year 2002 (starting October 2001), the pasture will be rested in fiscal years 2004 and 2007. This schedule was chosen to simulate a standard three-pasture rest rotation system. Holechek (1983) reported that three-pasture rest rotation grazing was found to have good results in southern Arizona. This situation is somewhat different in that only one pasture is available for grazing; if vegetative response is limited, consecutive seasons of rest may be considered. A grazing system that allows for rest of the pasture will benefit the native plant species by allowing increased seed production. Germination by native species will be enhanced. Increased litter deposition will add nutrients to the soil and provide germination sites for native plants. Erosion factors will also be improved.

Vegetation Monitoring

Vegetation monitoring will consist of plant sampling prior to livestock entering the allotment, inspection of the pasture during the grazing season, and plant utilization sampling after livestock are removed. Sampling will determine if the pasture is in suitable condition for grazing to begin, defined as average or greater production of grasses and forbs during periods of average or greater annual precipitation. Criteria for denying grazing or terminating grazing for the season will include 1) drought conditions, 2) recent wildland fires, 3) presence of threatened or endangered wildlife or plant species, or critical habitat for these species, that will be harmed from competition with livestock for resources or space, and 4) management or research activities that will be compromised by livestock.

Prior to (in September) the grazing period, park staff will conduct vegetation analysis consisting of quadrat sampling for plant frequency, species composition by the dry-weight rank method, density of special interest species with sampling by belt transects, and reading photo-trend plots (Ruyle 1987, Bureau of Land Management 1985). Exclosures less than one acre will be installed and sampled as paired plots (grazed and ungrazed). During the grazing season, the allotment will be inspected monthly by ocular estimates using the Grazed-Class Method for utilization sampling (Schmutz 1978). Utilization will not be allowed to exceed 40

percent in key areas. Sampling sites will be chosen to include the major vegetation types present and important riparian areas.

Grazing Developments

Existing

There are two types of developments in this allotment; fences and water wells (Figure IV-5). Boundary fences exist on the east and south sides of the allotment. The eastern boundary fence has been replaced by the NPS, which has the responsibility to maintain boundary fences. Fence construction will follow wildlife standards including proper spacing and the use of smooth strands on the top and bottom wires. Interior fences cover most of the northern boundary of the allotment. The condition of this fence is questionable and needs to be maintained by the permittee. A portion of the north allotment boundary needs to be surveyed and fenced by the permittee before grazing livestock. The steep escarpment to the west serves as a barrier to cattle movements. There are four water wells located in or near this allotment. Three wells are located in a group in the northern portion of the allotment and another is located near the southern boundary. The wells are currently capped and have not been tested for depth or water quality.

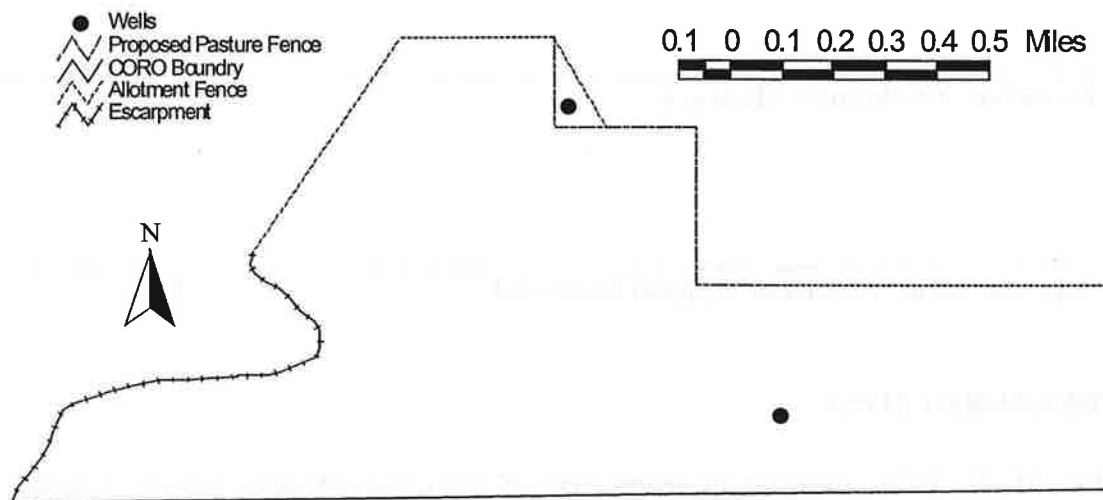


Figure IV-5. Fences and locations of water wells in the Montezuma Allotment, Coronado National Memorial, Cochise County, Arizona. Note that the well symbol to the north represents three wells.

Required to Permit Grazing

1. Complete the fencing on the northern allotment boundary. Fence construction must follow approved standards for wildlife. Fence standards are presented in the special use permit (Appendix I-3).
2. Obtain water by piping water from the existing well near the northern edge of the allotment or by using the capped well in the southern portion of the allotment. The preferred alternative will be the use of the northern-most well. The permittee will be responsible for all costs of water developments. The permittee shall present the NPS with a proposal on these developments for approval.

AGREEMENT

We, the undersigned, hereby agree to this Allotment Management Plan for the Montezuma Allotment. This plan may be modified if data from range and other studies indicate changes are necessary.

Permittee, Montezuma Allotment

Date

Permittee, Montezuma Allotment

Date

Superintendent, Coronado National Memorial

Date**LITERATURE CITED**

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