

Greater Huachuca Mountains Fire Management Group

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Abstract—The Greater Huachuca Mountains Fire Management Group is developing a fire management plan for 500,000 acres in southeast Arizona. Partner land managers include Arizona State Parks, Arizona State Lands, Audubon Research Ranch, Coronado National Forest, Coronado National Memorial, Fort Huachuca, The Nature Conservancy, San Pedro Riparian National Conservation Area, and private ranches. The plan will guide cross-jurisdiction collaborations on wildland fire use, prescribed burns, suppression, and non-fire fuels reduction around developed and other sensitive areas. Group members have outlined the plan and assigned major tasks to themselves. This paper serves as a spring 2004 progress report on the group's activities.

Introduction

The Greater Huachuca Mountains Fire Management Group (FMG) brings together public and private partners from the San Pedro River on the east through the Patagonia Mountains on the west (figure 1). The chief goal of the group is to jointly manage fire activities over the 500,000-acre area. Collaboration among landowners in the planning area began in 1996. The benefits of managing for fire on a broad landscape scale such as the greater Huachuca area are numerous. Foremost are:

- Increased public and fire crew safety
- Widespread improvement in ecosystem function
- Economical execution of fire activities

The collaboration also focuses on efficient communication about fire, responsible protection of sensitive resources, and border issues. In addition to land managers, participants from University of Arizona have come to the table—parties with fire-related projects in the planning area (Department of Geography, Institute for the Study of Planet Earth, School of Natural Resources, and USGS Sonoran Desert Research Station). Other cooperators include local fire departments, Arizona Department of Game and Fish, Immigration and Naturalization Service, and U.S. Fish and Wildlife Service (USFWS). Collaborators are also soliciting Mexican partners. The FMG intends to continue working together on regular updates of this plan.

Historically, fire burned frequently in the grasslands and woodlands of southeastern Arizona. Fire history studies in the vegetation types present in the Huachuca group planning area have detected fire return intervals of roughly 4–20 years before the suppression era began (Abbott 1998; Danzer 1998; Kaib et al. 1996; Swetnam and Baisan 1996). Regular fire keeps shrubs out of grasslands, thins forests to remove fire-intolerant trees, increases streamflows, and renews wildlife habitat. Fire also prevents fire. Burning can minimize potential for wildfires by

reducing overall quantities of fuels and breaking up contiguous vegetation. To facilitate more fire on the landscape and treatment of hazardous fuels, FMG partners are developing a fire management plan (FMP) to guide collaborations on fire program activities and allow projects to cross political boundaries. To achieve even a conservative (longer versus shorter) desired fire return interval of 20 years across the vegetation communities of the planning area, the group needs to think big and be ready to treat 25,000 acres per year.

Group Dynamics

There is no mandate holding the Huachuca FMG together other than policies that encourage cross-jurisdictional cooperation on fire. Individual representatives are serving with the blessing of the organizations they represent, for the most part unsupported by funds earmarked for this activity. How does such a group stay together? In a review of literature on cooperative planning as it might apply to fire management, Stapp (2003) found five factors that promote effective collaboration:

- Shared, vested purpose or goal that is not achievable by individual group members
- Willingness of each party to contribute to the collective effort
- Continuity of participation that allows group members to get to know, respect, and like one another
- Flexibility on the part of organizations represented that allows innovative pursuits
- Credible, strong leadership

After an initial pulse of activity in 1996, the FMG remained relatively dormant until the large wildland fires in the spring of 2002 affected the Sierra Vista Ranger District of the Coronado National Forest, Fort Huachuca, the Audubon Research Ranch, the Babocomari Ranch, and other private lands in the planning

GREATER HUACHUCA MOUNTAINS FIRE MANAGEMENT GROUP PLANNING AREA

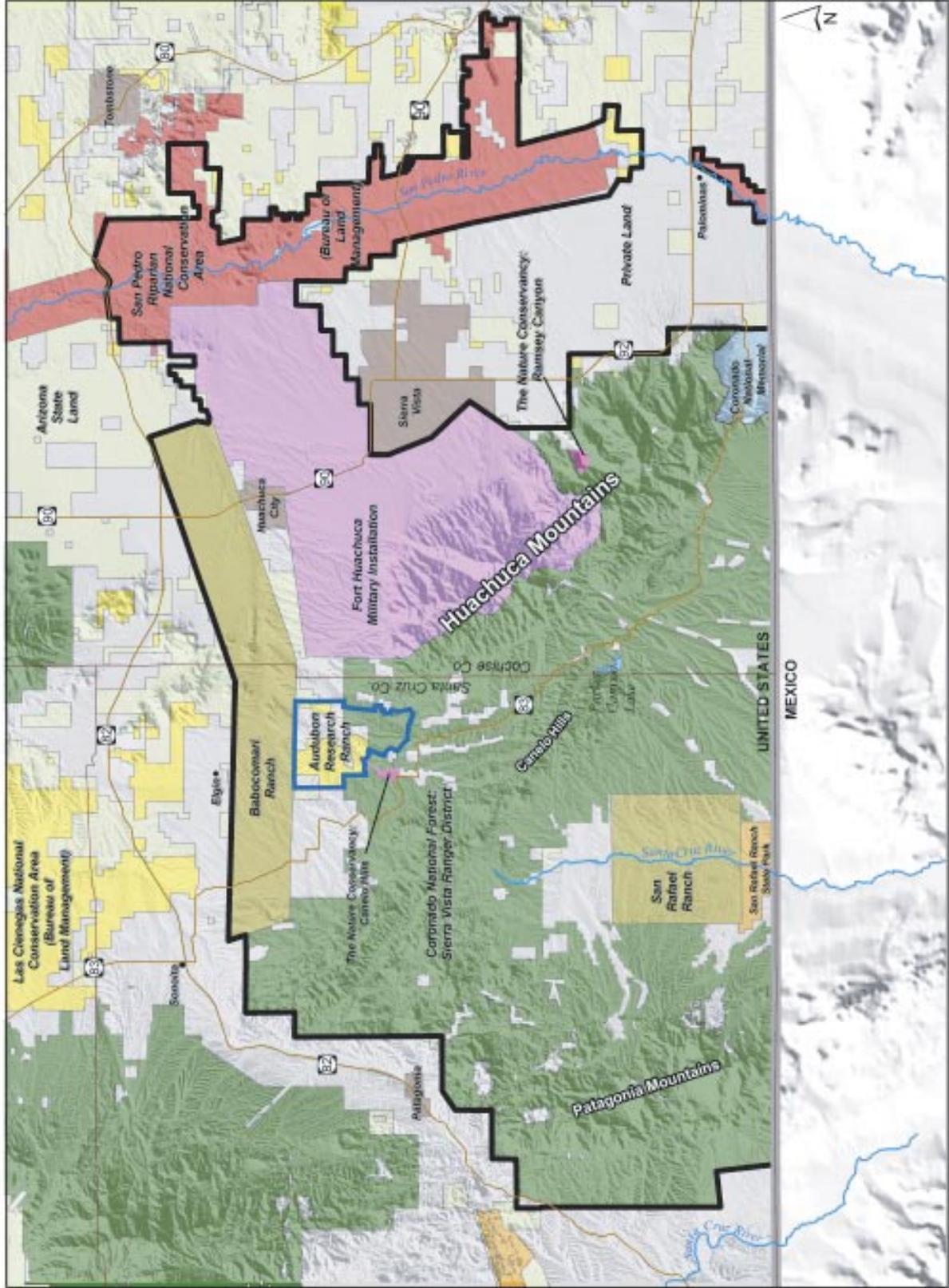


Figure 1—Greater Huachuca Mountains Fire Management Group planning area.

area. In the fall of 2002 Nature Conservancy spearheaded a FMG restart. The reformed group is overtly paying attention to the above factors and the challenges of (1) maintaining the alliance and (2) making genuine progress on the FMP. We have also come to appreciate ourselves as our best resource. Group field exercises contribute needed new data and provide opportunities for members of this diverse group to become better acquainted. As of spring 2004, four partners have acquired funding from their agencies that is covering small amounts of their time as well as buying student help and local outreach assistance. We recognize that completing this cooperative fire plan will strengthen the FMG's ability to attract funding for fuels projects in the region.

Progress Report

The contents of the greater Huachuca plan embody material that applies to all land manager partners. Together the group is defining for the planning area:

- Ecological mapping units
- Fire ecology and history
- Regional environmental issues
- Protection guidelines for listed species, sensitive cultural resources, and unique sites
- International border considerations
- Fire management units
- Inventory of regional operational resources
- 10-year plan for fuels treatments
- Outreach program

Federal managers and other members of the group are required to write their own FMPs according to internal standards. Use of the shared information in this plan is meant to reduce the effort required to produce those individual partner plans. Members adopt this plan then append it to their own documents or vice versa. The following sections review progress on the plan as of spring 2004.

Mapping Units

We are looking at the planning area landscape in three different ways: ecological mapping, fire management units (FMUs), and special treatment zones. Ecological mapping delineates natural units where fire regime, fire behavior, and desired effects of fire are relatively uniform. A separate paper in these proceedings (Laing et al. 2004) explains 12 ecological mapping units developed for the FMG area. These units have been defined as a composite of slope, geology, landforms, vegetation, soils, precipitation and temperature, elevation, and hydrologic characteristics. They serve as the framework for developing ecological goals for fire program activities and are recognizable as distinct by area land and fire managers. Members of the FMG have received training in fire regime condition class (FRCC) assessment and are evaluating vegetation of each ecological mapping unit. FRCC is a calculated departure from natural fire regime that has been promoted nationally as a tool to help standardize discussion of wildfire risk and prioritize the distribution of fuels treatment funds. The FMP fire ecology

discussion will lump these 12 types into a more manageable list of structural vegetation types: desertscrub, grassland, Madrean woodland, mixed conifers, and riparian.

At a second level, FMUs denote areas where particular fire management strategies are permitted. Land use, condition, and neighbors will determine applicability of (1) wildland fire use (allowing natural ignitions to burn); (2) appropriate management response (suppression); (3) prescribed fire; and (4) non-fire fuels treatments. The third level of organization identifies special treatment zones, where particular needs within an ecological mapping unit or fire management unit dictate fire activities. Presence of special status species, riparian areas, sensitive cultural resources, or residential development could necessitate deviation from ecological mapping or fire management unit goals. A session with cultural resources experts from the group's four Federal agencies identified rock art and flammable structures eligible for listing on the National Register as the area's most fire-sensitive and culturally significant resources.

Regional Environmental Issues

The FMG scoped regional environmental issues to provide a shared basis for NEPA analysis. We narrowed down an extensive list of possible areas of concern to the following:

- Life and property: Fire is an effective tool for reducing fuels, but it is also a threat to people and developed areas. Juxtaposition of wilderness and wildland-urban interface complicates fire management.
- Community economics and land use: Property values can be reduced by adjacent burned landscapes, but owners who apply firewise measures can increase values. Local tourist-based businesses may experience temporary declines if visitation drops due to fire-related concerns, but businesses may also benefit from providing supplies and services for fire operations. Fire can improve forage for wildlife and livestock.
- Border concerns: Proximity to the international border brings danger to and from illegal immigrants and drug operatives in fire project areas and limits use of tactical tools; it also brings opportunities to cooperate with Mexican resource managers on fire projects, particularly training and suppression activities.
- Sensitive species: Fire could directly kill or injure listed, rare, or charismatic plants and animals, but fire also promotes reproduction in fire-adapted plants and renews wildlife habitat. Negative short-term effects lead to long-term gain, in many cases.
- Exotic species: Fire may aid invasion and spread of some exotic species but may also prove to be a control tool for others.
- Cultural resources: Historic structures, landscapes, and artifacts may incur fire damage, while fire may help reduce surrounding hazard fuels and maintain the historic scene.
- Watershed integrity: Fire can remove vegetation from slopes and cause increased erosion and downstream sedimentation until plants regrow. Removing vegetation also changes soil moisture regimes and flows in springs and streams. Fire can

Table 1—Federally listed species within the Fire Management Group Planning Area.

Species	Status	FMG-area habitat
Species that may travel through the area but are likely not to be affected by fire activities		
Jaguar (<i>Panthera onca</i>)	E	Madrean woodland
Species that occur in wet places immune from direct effects of fire but susceptible to post-fire sedimentation		
Canelo ladies tresses (<i>Spiranthes delitescens</i>)	E	Cienegas in the Canelo Hills
Huachuca water umbel (<i>Lilaeopsis schaffneriana</i> ssp. <i>recurva</i>)	E	Wetlands throughout planning area; 4,000-6,500 ft
Gila topminnow (<i>Poeciliopsis occidentalis occidentalis</i>)	T	Small streams, springs, cienegas below 4,500 ft with aquatic vegetation and debris for cover; Santa Cruz drainage
Chiricahua leopard frog (<i>Rana chiricahuensis</i>)	T	Canyons with perennial water and stock tanks; 3,300-9,000 ft
Spikedace (<i>Meda fulgida</i>)	T	San Pedro River
Sonoran tiger salamander (<i>Ambystoma tigrinum stebbensi</i>)	E	South end of Canelo Hills; 4,000-6,300 ft
Huachuca springsnail (<i>Pyrgulopsis thompsoni</i>)	C	Possibly in wetlands throughout planning area; 4,500-7,200 ft
Loach minnow (<i>Tiaroga cobitis</i>)	T	San Pedro
Gila chub (<i>Gila intermedia</i>)	PE	Smaller streams, cienegas, impoundments on west side of Huachucas; 2,000-3,500 ft
Species that would be affected if riparian habitat burned		
Southwestern willow flycatcher (<i>Empidonax traillii extimus</i>)	E	San Pedro River
Western yellow-billed cuckoo (<i>Coccyzus americanus occidentalis</i>)	C	San Pedro River and possibly riparian woodlands throughout area
Bald eagle (<i>Haliaeetus leucocephalus</i>)	T	Seen at Parker Canyon Lake
Species requiring careful project-by-project consideration		
Lesser long-nosed bat (<i>Leptonycteris curasoae yerbabuena</i>)	E	Cave/mine roosts, <i>Agave palmeri</i> foraging areas
Mexican spotted owl (<i>Strix occidentalis lucida</i>)	T	Closed-canopy, uneven-aged forest stands and canyons, 4,100 to 9,000 ft
Pima pineapple cactus (<i>Coryphantha scheeri</i> var. <i>robustispina</i>)	E	Far west side of planning area

E = Endangered: Species is in danger of extinction throughout all or a significant portion of its range. (PE = Proposed endangered.)

T = Threatened: Species is likely to become endangered within the foreseeable future.

C = Candidate species: USFWS has sufficient information on their biological status and threats to propose them as endangered or threatened under the Endangered Species Act, but development of a listing regulation is precluded by other higher priority listing activities.

also cause short-term changes in soil and water chemistry. Long-term, fire will decrease woody vegetation and increase herbaceous vegetation which should result in decreased water run-off and soil erosion and increased infiltration (diffuse aquifer recharge).

- Plant communities: Fire may change the character of unique habitats within the planning area, but fire may also return plant communities to historic species compositions and structures. Widespread, high-intensity fires can lead to destructive vegetation type conversion.
- Recreation and wilderness: Fire activities may temporarily interfere with recreational use of planning area lands, but long-term fuels reduction and ecological benefits ultimately can make recreation safer and more enjoyable. Fire operations can disrupt wilderness values, but presence and effects of fire help maintain the integrity of wilderness.
- Aesthetics: During fire operations equipment noise and smoke disturb visitors and nearby residents. Burnt landscapes are unattractive to many people, but education about the benefits of fire can help build tolerance and even appreciation.

Special Status Species

Managing fire in the greater Huachuca area requires paying attention to numerous Federally listed species as well as those

protected by other agencies. Table 1 is a list of the species protected by the Endangered Species Act that the FMG must consider across its 500,000-acre planning area. The FMG is working with USFWS to develop consistent fire program conservation measures for these species. We are using the approach developed for the FMP—creating a blanket report on these species that forms the basis of compliance documents. As we define a set of specific projects, we will be working further with USFWS on a programmatic consultation that covers all the partners. Special treatment zones, mentioned above in the mapping discussion, have been proposed for Mexican spotted owl protected activity centers and riparian and wetland areas that are habitat for many species appearing in table 1.

Regional Operational Resources

The FMG has compiled a list of the fire management resources present in the region. The inventory covers vehicles, miscellaneous equipment, and personnel and certifications for four Federal agencies, six local fire districts, two non-profit organizations, and the State of Arizona.

Challenges

As we complete the FMP, moving from writing to taking action is the biggest challenge facing the Greater Huachuca Mountains FMG. We will also need to take the plan to the

public, and each agency will face integrating its practices with the direction of the group. At present, the group remains committed to executing projects that require collaboration to succeed—that cannot be carried out by parties acting alone.

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References

Abbott, Laurie. 1998. The ecological role of fire in southeastern Arizona oak woodland ecosystems. A report to The Nature

- Conservancy by the School of Renewable Natural Resources, University of Arizona, contract # USPE041498.
- Danzer, Shelley R. 1998. Fire history and stand structure in the Huachuca Mountains of southeastern Arizona. Tucson, AZ: The University of Arizona. 109 p. Thesis.
- Kaib, Mark; Baisan, Christopher H.; Grissano-Mayer, Henri D.; Swetnam, Thomas J. 1996. Fire history of the gallery pine-oak forests and adjacent grasslands of the Chiricahua Mountains of Arizona. In: P. F. Ffolliott; L. F. DeBano; M. B. Baker; G. J. Gottfried; G. Solis-Garza; C. B. Edminster; D. G. Neary; L. S. Allen; R. H. Hamre, tech coords. Effects of fire on Madrean Province Ecosystems. Gen. Tech. Rep. RM-GTR-289. Fort Collins, CO: U.S. Department of Agriculture, Forest Service Rocky Mountain Forest and Range Experiment Station.
- Laing, Larry; Gori, David F.; Jones, James T. 2004. The development of landscape-scale ecological units and their application to the greater Huachuca mountains fire planning process. This proceedings.
- Stapp, Ethan R. 2003. Factors affecting interagency wildland fire management and recommendations for future collaborative endeavors. Tucson, AZ: University of Arizona, School of Planning. Thesis.
- Swetnam, Thomas W.; Baisan, Christopher H., 1996. Fire histories of montane forests in the Madrean Borderlands. In: P. F. Ffolliott; L. F. DeBano; M. B. Baker; G. J. Gottfried; G. Solis-Garza; C. B. Edminster; D. G. Neary; L. S. Allen; R. H. Hamre, tech coords. Effects of fire on Madrean Province Ecosystems. Gen. Tech. Rep. RM-GTR-289. Fort Collins, CO: U.S. Department of Agriculture, Forest Service Rocky Mountain Forest and Range Experiment Station.