

Figure 1. The U.S. Forest Service reported 33,965 lightning-set fires on the 20,407,885 acres that comprise the national forests in Arizona and New Mexico during 1945-1966. The multiple bolts in photo are near Tucson.

that continued burning was essential to maintain this important forest type.

Charles F. Cooper described fire in the ponderosa pine forests (*Pinus ponderosa*). He stated that a mosaic pattern of uneven growth occurs under the influence of recurrent light fires. The first fire consumes the dead trees, preparing a good seedbed of ash and mineral soil. The newly seeded openings are now protected from fire damage by the lack of dry pine needles to fuel another fire. Eventually the saplings drop enough needles to support a light surface fire, which kills many smaller saplings, but leaves most of the larger ones alive.

Instances of vigorous fire exclusion have broken this ecological cycle.

*In Southern Arizona . . .*

## Controlled Fire is Valuable

*by Dick R. McCleery\**

Attitudes about the use of fire on public natural areas have continually and dramatically changed in American history. Government agencies have been established to conserve natural range, forest and wildlands. Near Tucson, Arizona, several differences in management goals and fire policies can be observed between two Federal land managing agencies. The National Park Service recently has instituted a prescription plan. This plan utilizes naturally occurring fires to preserve desired vegetation within the Saguaro National Monument. The Coronado National Forest maintains a high level of fire exclusion in the Mount Lemmon Recreation Area. This article presents the differing management and fire use policies of two local Federal land managing agencies.

### Historical Aspects

American history has been blackened by repeated destruction by fire.

Fire has destroyed vast amounts of forest and water resources. Fire was, initially, used as a tool by Indians and settlers to clear lands for hunting, farming and to promote increased forage. As logging and homesteading increased, residues were increased, making careless wildfires more frequent.

While fire was used almost daily, it was considered a common occurrence. There was no penalty for setting fires. No programs for fire prevention, detection or suppression were practiced. Knowledge of fire, how it affected the vegetation and soil was based on vague traditions passed down from previous generations.

Attempts to eliminate fire have introduced problems as serious as those created by wildfire disasters. S. W. Greene, in 1931, wrote that the economically important long-leaf forests (*Pinus palustris*) of the south resulted from long years of repeated fires and

Without recurring fire, dense thickets of young trees become numerous, grass is reduced and dry branches and needles accumulate to such an extent that any fire is likely to blow up into an inferno that will destroy everything in its path.

### The Forest Service

Following reorganization of the Forest Service, it became a part of the U.S. Department of Agriculture in 1905. Familiar with fire disasters from coast to coast, the Forest Service took a firm stand and conducted a campaign against fire use. The decision not to permit even experimental burning was seldom broken. However, the reason for occasionally ignoring the rule by an agency was to reduce fuel buildup and reduce the danger of fire.

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According to John Pierovich of the U.S. Forest Service, "Fire is a natural element in the forest but can be destructive unless prescribed, controlled or otherwise confined to meet the needs of man. Other management substitutes can be made which may completely replace fire; much depends upon the management objective established for a particular land area."

### The National Park Service

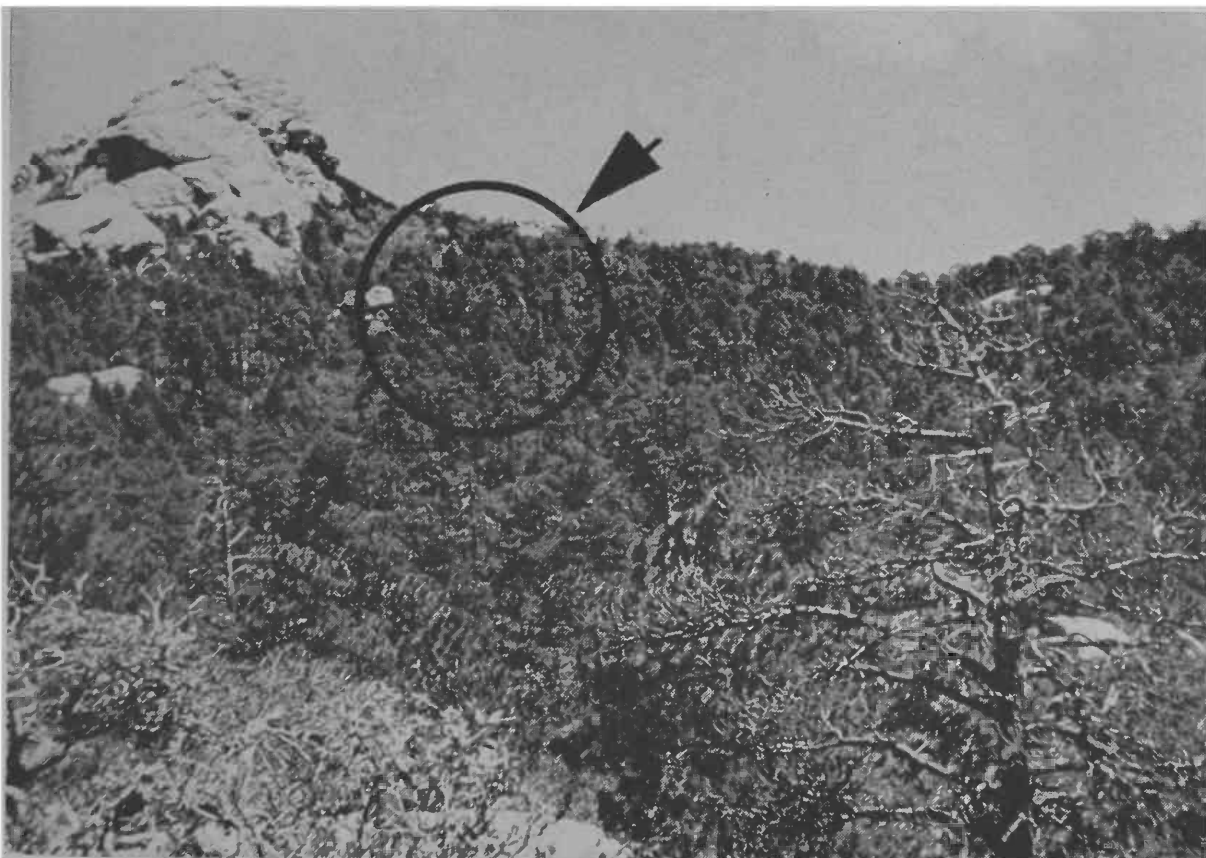
Established in 1916 with a new job to preserve the role of the National Park Service was different from the protective and sustained use goal found within the Forest Service. This was a system for preserving natural areas and for encouraging an appreciation for our nation's resource heritage. Initially many National Park concepts and policies were adopted from other agencies. These included an efficient fire control system, since fire was considered an enemy to natural communities. Service policies also stressed the exclusion of activities not related to facilitating visitor use, i.e. ranching, logging and mining.

Presently the manual, *Administrative Policies for Natural Areas of the National Park System*, (1969), recognizes many fires as natural phenomenon contributing to the perpetuation of natural environments. Prescribed fires — man made or those occurring naturally and allowed to burn — were



**Figure 2. Natural fires are allowed to burn on the Saguaro National Monument. The lightning-set Four Corners Fire burned 640 acres before dying out. This photo by Louis Gunzel, Chief Ranger, was taken at that time.**

employed to achieve vegetation or wildlife objectives. the principle restraints are to prevent loss of life,



**Figure 3. Low intensity, natural or controlled fires can remove accumulated surface debris, leaving overstory pines intact. The area enclosed within the circle has just been burned over by the Helens Dome Fire, as photographed by Gunzel.**

damage to property, recreational and historical structures or the spread of wildfire to lands outside natural area boundaries.

The National Park Service prescribes fire only with desirable weather, humidity, past and expected rainfall and amount and condition of fuel. Naturally prescribed fires — those allowed to burn — are a relatively new method of maintaining natural communities and reducing wildfire potentials. An example of this type of prescription was developed by Louis L. Genzel, Chief Ranger on the Saguaro National Monument.

### Gunzel's Prescribed Fire

Gunzel's plan adopted in 1971, permits lightning fires to burn when environmental conditions insure optimum fire control. There have been objections to this plan from the State Environmental Protection Agency and local citizens. These objections were  
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concerned with air pollution and the expected, or classical, fire damage to the environment. Many of these inquiries were handled by Gunzel, who explained the natural role of fire in the Monuments' environment. Most conservation groups and the general public support this method of reintroducing natural fire into the natural environment.

The Saguaro National Monument is located East of Tucson, Arizona, in the Rincon and Tanque Verde Mountains. Roads are few, restricting communications and access; fuels accumulate increasing fire disaster probabilities; and an intensive lightning fire season prevails. Since fire naturally occurs, careful management practices use fire to maintain the Saguaro Monument environment.

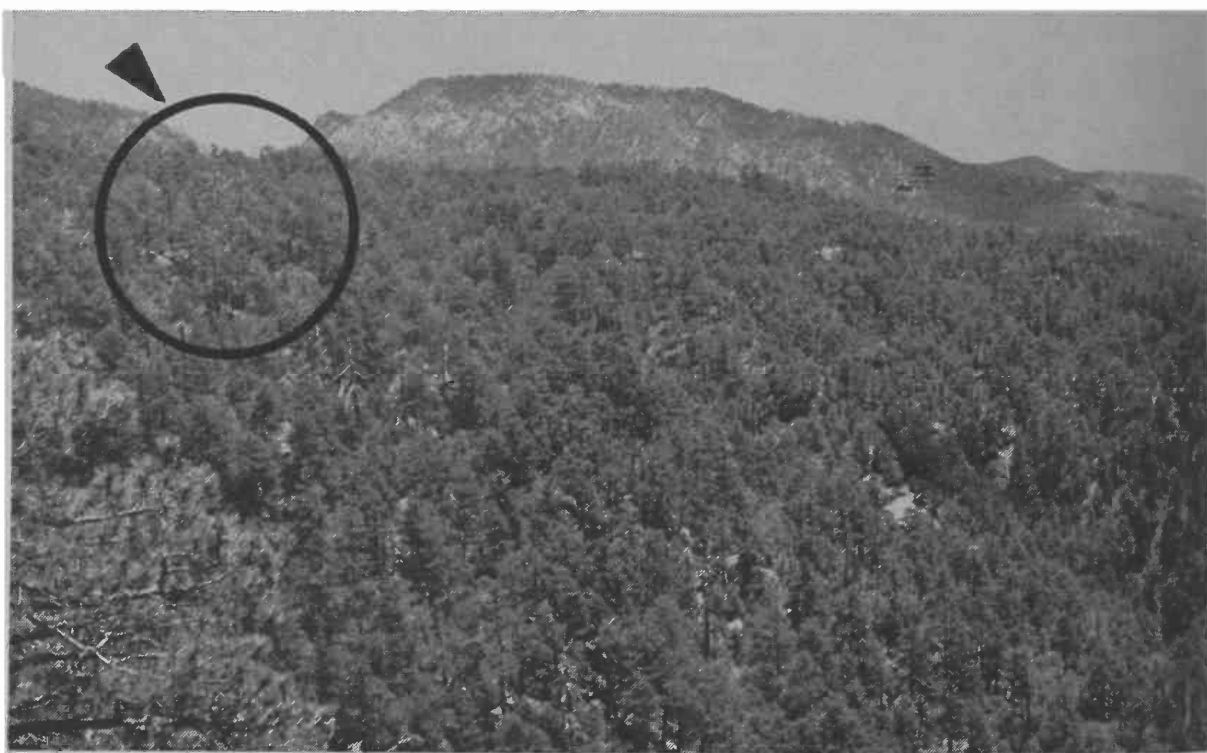
We must also remember that many of the range and forest management techniques available to other agencies are not compatible with the National Park Service's role to preserve our natural and historic resources. Road construction is limited. The use of heavy equipment such as bulldozers and trucks are restricted along with logging, grazing or any use that would do permanent damage to the resource.

### Mount Lemmon Recreation Area

North of the Saguaro National Monument is a similar area which is managed by the Coronado National Forest. Within this forest is the Mount Lemmon Recreation Area. It is important for its high elevation ponderosa pine forests. The Forest Service has for several decades efficiently excluded all major forest fires from this area. Although forest fuels — dead pine needles, branches, and undergrowth — may accumulate at slower rates in the southwest's lower moisture and slower growth environment, the combination of frequent drought, high occurrence of lightning and general availability of the forested area to recreationists has made Mount Lemmon a potentially explosive fire environment. Perhaps the largest management obstacle on Mount Lemmon is not physical but social, or one of public awareness. The Mount Lemmon Recreation Area has good accessibility and communications enabling a highly efficient fire suppression program. The removal of forest fuels through prescribed burning or some other management technique could reduce the danger of a great



**Figure 4. Another Gunzel picture shows low intensity fire can burn dead leaves and pine needles without destroying living vegetation. This photo was taken while the Helens Dome Fire still smoldered.**



**Figure 5. The Organization Ridge Prescribed fire is located at the head of Pallisade Canyon, arrow. The controlled fire removes ground litter and undergrowth which provides a fuel break. This control burn is situated to prevent low elevation wildfires from moving up the canyon into the dense ponderosa pine.**

fire burning off the entire mountain top.

Howard Shupe, Fire Control Offi-

cer on the Coronado National Forest was very confident in the fire-control procedure presently used and it's

ability to prevent future fire disaster. He pointed out that multiple use policies officially adopted by the Forest Service in 1960 discouraged fire use. Fire techniques may benefit some uses, while simultaneously reducing others.

Climatic conditions have changed since the Mount Lemmon area was forested. It has become drier. And, should a fire or other disaster destroy the forest on Mount Lemmon the present climate conditions may not be conducive to reestablishing another forest.

Another factor discouraging fire use on the Mountain is the abundance of private homes and property, requiring fire protection and therefore, restricting fire by natural prescription.

Shupe said there are two present fire management plans on the Coronado National Forest; the Organization Ridge Prescription on Mount Lemmon is a program to facilitate wildfire control thru fuel hazard reduction. The present burning plan includes 23 acres near summer homes and recreation developments.

The second burning prescription is for range improvement in the Redington Pass area. A range in poor condition established thru decades of overgrazing can be improved by controlled burning. The correct fire prescription will encourage regrowth of grass and shrub forage for livestock and wildlife use. A successful fire prescription can reduce fuel accumulations and control undesirable vegetation.

Fire is used by the Forest Service as another management tool under very controlled conditions. Fire lines are established, undergrowth thinned and piled, and timing is critical to obtain the correct intensity for each burn.

The National Park Service desires to reintroduce natural fire. Natural fires are started by lightning with no fire lines and no thinning of fuels. In both agencies, fires are allowed to burn only after prescribed climate and fuel conditions are met.

### Fire Management Is Responsive to Public Opinion

Forest Service management has a complex relationship with public attitudes. Their initial involvement was that of managing the harvesting of commercial forest products. Now multiple-use objectives has widened the scope of management to obtain



**Figure 6.** Preparation for the Organization Ridge Prescription includes removal of undergrowth and low hanging pine bows. Here the cut undergrowth called slash is piled outside the established fire-line.

greater sustained yields for man's needs. This includes many products such as timber, water, and recreation. The relationship with the public is perhaps much simpler in the National Park Service. They are obligated to

protect, preserve, and interpret natural areas. Their primary goal, preservation, has allowed them to maintain a relatively free hand to implement management within their natural area boundaries.



**Figure 7.** Dense, dwarf stands of young pine had to be thinned and burned. Remains of a slash pile (upper left) can be seen inside the fire-line on Organization Ridge.