

# Controlled Burning on California Wildlands

F. H. RAYMOND

*California State Forester*

WE HAVE COME a long way in understanding the use of fire in the management of California's wildlands. We still have a long way to go, but I want to emphasize the progress that has been made. Wildland burning has had a long history of controversy and the laws and public policy we have today regarding the use of fire represent in great measure the progress that has been made toward this understanding.

## THE CONTROVERSIAL ROLE OF FIRE

Why the controversy? Why the gulf between those who would exclude fire completely and those who advocate its widespread use? Fire itself is a phenomenon of extremes; it is either a good servant or a bad master, and perhaps we tend to view it in only one or the other of these roles.

Nevertheless, I think there are two main reasons for the controversy concerning the role fire should play in the wildland environment: One, our failure to understand fully the complexities of the state's ecology and, two, our failure to recognize that this ecology has changed, is changing, and will continue to change.

We Californians point with pride to the variety of our state. We have a complex geology and physiography. We have coast lines,

F. H. RAYMOND



FIG. 1. The role that fire should play in wildland management is controversial because of California's complex, changing ecology. We must judge the value of fire as a modern management tool under today's conditions, not yesterday's.

mountains, valleys, deserts, and plateaus. We have a latitudinal spread of almost 10 degrees and a range in elevation from below sea level to over 14,000 feet. We have several climates, with some of the hottest and coldest and the wettest and driest in the country.

As one example of this ecological diversity, in only 20 years of mapping upland soils and vegetation in the northern part of the state, we have classified over 300 new soil series. With such a complex ecology, so many environments, it is easy to understand why the proper role of fire is subject to debate.

I think we can all agree that throughout the ages, fire has played an important role in shaping California's wildland environments. Although we may generalize to this extent, we run into conflicting opinion when, on the basis of this generalization, we advocate the use of broadcast fire as a general management tool or problem-

## CONTROLLED BURNING ON CALIFORNIA WILDLANDS

solver. The application of fire should be addressed only to specific problems, specific areas, and specific conditions.

In addition to being complex, the ecology of California has changed, and our failure to recognize this change also leads to misunderstanding.

Again, I think we can all agree that man has evolved with and used fire to modify his environment. But, it is not really important whether we agree with estimates of the extent to which he may have used fire because the aborigine who occupied California 200 years ago is not the man who occupies it today.

Today we have an entirely new set of conditions. California in only 198 years has changed from a pristine condition to one of the most populous and highly developed states in the nation. I know of no other area in the world that has developed to this extent so rapidly. The ground rules for the use of fire have changed. Concepts of land management have changed; and just as the Spanish did not follow the Indians, and just as the pioneers did not follow the Spanish, there is no logical or compelling reason why we of today—of different circumstances—should necessarily follow the past in our concepts of wildland management.

We must appraise the value of fire as a modern management tool under today's conditions, not those of yesterday.

## CONFLICT BETWEEN FIRE PROTECTION AND CONTROLLED BURNING

It has been said that in the old days there was brush, but not much of a brush problem. It can be said that there was fire, but not much of a fire problem. Also, there was erosion, but no great problem. However, as the state grew, so did the problems, and reaction to indiscriminate burning which was linked to these problems came.

Opposition to the unrestricted use of fire in California came early from two sources; from the south when agricultural and water interests suffered from flood and sediment damage which generally followed watershed fires, and from the north when standing timber acquired sufficient value that losses from wildfire could no longer

F. H. RAYMOND

be tolerated by the timber interests. Demands for forest and watershed fire protection were based on genuine needs, and public support seeking this protection in California was intimately linked with the conservation movement nationally.

One result of this demand for wildland fire protection in California was that the state assumed the primary financial responsibility of fire protection for the forest, watershed, and contiguous rangelands which are in private and state ownership. These lands, as classified by law and determined by the State Board of Forestry, cover some 33 million acres. The State Forester, through the Division of Forestry, is responsible for providing a system of forest and watershed fire prevention and suppression for these lands and is charged with the administration of state laws governing the use of fire upon or adjacent to flammable vegetation or material.

With restrictions thus placed on the use of fire, the livestock interests felt constrained—that they were denied the use of a legitimate, and in most cases the only practical, land management tool. Because the lands protected by Division of Forestry include the foothill rangelands which are important to the livestock industry, and because fire was the most commonly used method of clearing brush from these lands, the Division became involved in the controversy between the burners and the non-burners. And it is for these same reasons that the Division today is involved in the controlled burning program.

#### **CONTROLLED BURNING (BRUSH RANGE IMPROVEMENT) PROGRAM**

Out of this controversy, the past years have seen the development of policies and regulations concerning the use of fire for range betterment and a transition from generally indiscriminate use of fire to planned and controlled use for specific purposes.

The present controlled burning program (more properly, the range improvement program) was initiated by the Legislature in 1945. Statutes enacted in that year (by Chap. 1109, 1945, Sections 4491-4494, inclusive, Pub. Res. Code) specifically authorize the Division of Forestry to regulate controlled burning of brush for

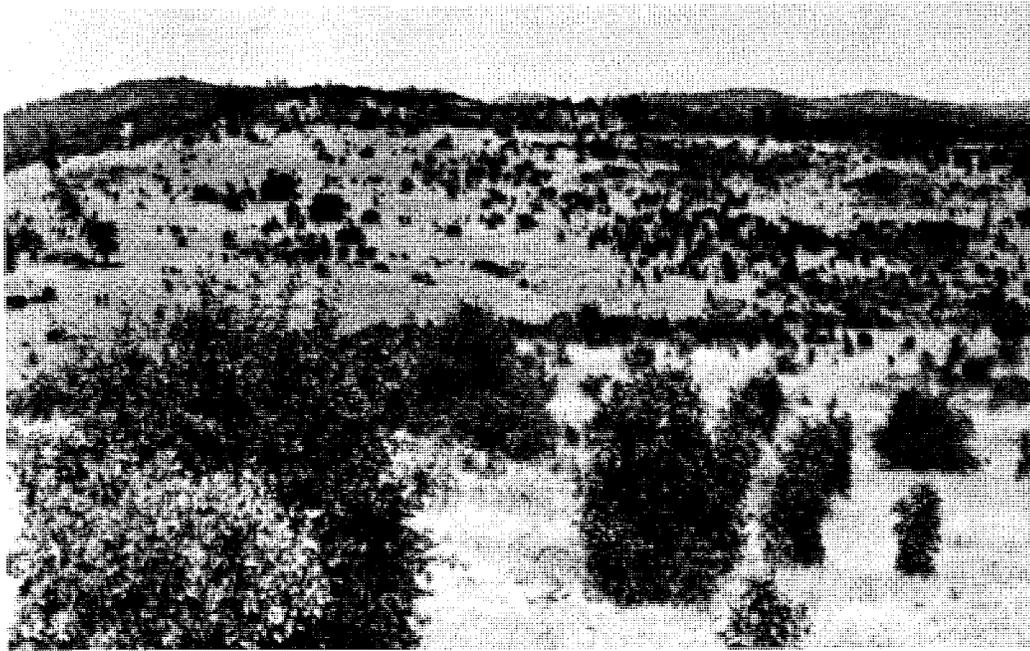


FIG. 2. Special legislation permits controlled burning for range and wildlife habitat improvement; much has been accomplished under this program. Beef production on this range was increased fourfold by controlled burning, reseeding, and grazing management.

improving livestock range and wildlife habitat. The Division's responsibilities are to receive applications for burning, to make written suggestions for precautions to be used in the burning operation, to issue burning permits, and when possible to provide some additional fire protection for surrounding properties during the burning operation.

State Board of Forestry policy recognizes fire as one method having an appropriate place in the development, management, and conservation of the natural resources of California. The Board recognizes that some of the brush-covered lands may be adaptable to conversion from a brush range type to a more suitable forage cover and encourages their overall development and improvement. The Board encourages the practical application of methods determined through experimentation, including fire. The Board also encourages the use of plans which enhance the value of range improvement projects for fire hazard reduction and fire control,

F. H. RAYMOND

stabilization of the soil, water conservation and production, and betterment of game habitat.

Importantly, both the legislative policy and Board of Forestry policy recognize the fire protection benefits of the program.

It may be well to pause and consider where the use of fire stands legally in California. It occupies a rather delicate balance. On one hand, there are no *general* laws (to my knowledge) that prohibit the use of fire by landowners for land management and fire protection purposes (except to some degree in local areas such as smog control districts). Nor, are there laws which compel him to use fire. The use of fire is solely a proprietary management practice subject to the management policy of the landowner himself.

On the other hand, controlled fire is considered a tool, but a dangerous one, and there are special laws governing its use. Wildfire, of course, is a recognized public nuisance, and even with the existence of public fire protection, the prevention and suppression of the uncontrolled fire is recognized as a fundamental obligation of using and managing land. Thus, controlled burning operations stand somewhere between the need for a mandatory prevention of public nuisance and the recognition of the right of an individual to manage his property as he chooses.

#### **CONTROLLED BURNING ACCOMPLISHMENTS**

The Board of Forestry has organized a Range Improvement Advisory Committee to advise it on matters pertaining to the range resources of California and the range improvement program administered by the State Forester. This Committee has promoted safe and effective controlled burning, and was instrumental in developing the "Brush Range Improvement Plan of the State of California."

This plan recognizes the need for coordinated efforts of range improvement in brush areas; it embodies organization and function at community, county, and regional levels, and shows the relationship of advisory and regulatory agencies to these organizations. About 20 of these local and county organizations (and one regional organization) have been formed. Most of these today are active and functioning well.

#### CONTROLLED BURNING ON CALIFORNIA WILDLANDS

Since 1945, ranchers and sportsmen have used over 8,000 permits to control-burn brush and other vegetation on 2¼ million acres in California. Although most of this burning has been done to improve forage for domestic livestock, much of it has also been done for wildlife habitat improvement. Additional acreage has been burned in the winter and spring when burning permits are not required in some parts of the State. Much of this burning is in the chamise for game habitat improvement. Of the 2¼ million acres burned, about 600,000 acres are reburns—acreage burned two or more times.

#### TRENDS IN CONTROLLED BURNING

The 2¼ million acres burned in the last 22 years would indicate that ranchers in California are burning 100,000 acres per year.



FIG. 3. Air pollution is one of the problems associated with increasing population. Controlled burning faces tightening air pollution restrictions and increasing escape liability problems.

F. H. RAYMOND

Actually, however, the trend is one of decreasing activity.

Burning activity peaked in the early 1950's (peak year of 227,000 acres burned in 1954), and has declined steadily since (last year 58,000 acres were burned). Much has been accomplished; but why, with so much brush area remaining and with considerable experience gained in controlled burning, has activity been decreasing?

One reason, of course, is that beef prices in recent years have not been conducive to a healthy industry willing or able to invest in marginal lands. Also, management objectives have been completed on some of the originally troublesome brush areas. The answer, I believe, can also be found in changing conditions, changes that loom large on our wildland horizons.

For example, changes in land ownership and use in some areas brought in a new breed of owners who are not interested in controlled burning or are hostile to it. People moving into the wildlands have broken up large tracts into smaller ownerships, and this development of open lands has restricted fire line location and burning strategy to the point where burning costs are very high. These changing conditions have increased the seriousness of escapes and intensified the fire liability problem.

Another problem auguring change in controlled burning activity is air pollution. Controlled brush burning along with other types of agricultural burning will face tightening restriction, if not elimination, in many localities. Today, several counties have placed restrictions on agricultural burning, and steps are being taken to find alternate methods of waste material disposal (Sacramento City is currently being "scourged" daily with smoke from burning rice stubble. Outcries demanding control of this air pollution is in each daily paper).

#### **CONTROLLED BURNING AND THE WILDFIRE PROBLEM**

Increased development of brush lands has not only restricted burning operations but also has profoundly affected the wildland fire protection problem. Individual homes, residential subdivisions, and entire communities have been built in the wildlands without regard for the fire hazards involved. The natural vegetation makes pleasant



FIG. 4. Homes and communities have been built in the wildlands without regard to fire hazards. The role of controlled burning in reducing brush fire hazards must be carefully determined; there is no single, simple solution to the problem of fire hazard reduction.

surroundings for home sites and communities but it is deceptively flammable. Such developments and use have not only increased the chances of wildfires occurring but the structures and the people themselves are exposed to serious fire threats.

There is no doubt as to the flammability of native brush that grows on our watersheds. There is no doubt that when these lands are developed and people move in, the brush constitutes a fire hazard to their homes. Holocausts occur much too often in our wildlands. There is little doubt that the removal of brush would reduce the amount of heavy fuel and hence the threat of the disastrous fire. The question is, can control burning do this job?

Ranchers, fire protection agencies, research organizations, and university extension now have had over 20 years of experience with controlled burning for range improvement, under a more or less formalized program. Methods have been worked out, benefits have

F. H. RAYMOND

been demonstrated, and many problems have been solved. Can we apply what has been learned in solving the wildfire problem?

Some think so; others do not. On one hand there are those who equate brush burning to an acre-by-acre solution to the wildfire problem; on the other hand there are those who would not profit from experience.

The problem, of course, is complex. There is no single, simple solution. Because of the importance of the problem I would like to discuss it in some detail. Let's see what we face:

**The amount of brush is staggering!** Depending on how you wish to classify vegetation, there are 10, 20, even 30 million acres of brush, any acre of which can be a fire hazard. An estimate of brush acreage commonly stated—24 million acres—gives California a brush fire problem area greater than the combined total area of the states of New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, and Delaware.

This vast acreage alone suggests that we must be selective and approach the problem on a planned priority basis. Five years ago, a fire prevention study pin-pointed 543 critical areas of forest fire hazard endangering life and property. These areas involved 2,703,000 acres, 1,320,000 permanent and seasonal residents, and 252,000 structures. These figures give some idea of the enormity of the problem. The critical acreage alone is more than that burned for range improvement in the last 22 years.

**Fire is dangerous!** Although we can point with considerable pride to the care taken to keep fire within its intended limits, we still must face the fact that using fire is a risky business. High insurance rates and few companies willing to assume the risk attest to this. On the average, about one out of every eight (13%) controlled fires gets away.

We will have to increase our competence with fire, and this means increased costs.

**Who does the burning?** Some advocate that the State tackle the job of burning and assume the risks involved. The Legislature, however, has never shown an inclination to do this. I am sure there will have to be a rather precise definition and delineation of fire hazards and a determination of fire prevention and suppression benefits.

## CONTROLLED BURNING ON CALIFORNIA WILDLANDS

There will also have to be a more precise determination of benefits accruing to the public as a result of controlled burning. It has never been determined to be a function of state government to clear private land (by any means) for enhancement or economic benefit.

**Ownership is a problem.** Consideration must also be given to the point that the state cannot compel an owner to clear brush from his land unless the brush has been by law declared to be a public nuisance. Otherwise, there is no right of "eminent domain" for the state to invade the privacy of property owners. Thus, the state could not remove the vast fields of brush without the consent of each and every owner of thousands of separate parcels of land, even if adequate public funds were available. Further, it is difficult to believe that adequate results for public fire protection could be gained through such a method, and it could be an extremely un-economic and wasteful effort.



FIG. 5. Man is drastically changing his wildland environment. Progress in understanding the use of fire will depend on understanding the social as well as the biologic aspects of our wildland ecology.

F. H. RAYMOND

Consideration must be given to the ownership pattern of private and federal land. The federal land managing agencies are in a position not too different from that of the private landowner—the use of fire is a managerial decision and one that involves the assumption of liability and the expenditures of funds.

**Is there a solution?** There is little question that the reduction of brush fire hazards is necessary. Fire Prevention Legislation of 1963 in fact establishes this as state policy and defines the area of primary concern.

What might be accomplished? Three methods have great potential and merit consideration. One is obtaining support of strict compliance with fire laws and fire regulations; the second is in exerting every available pressure to obtain the removal of fire hazards and risks where it is feasible to do so; the third is in planning to avert the creation and existence of hazardous situations. Progress is being made along these lines, and I'm sure it will continue.

We have come a long way in understanding and applying fire in wildland management. Just as progress has been made in determining the role of fire in brush range improvement, so will progress be made in using fire for other management objectives. Progress will come if all of us help to create an awareness and understanding of fire ecology. And, progress will come faster and smoother if we don't become so absorbed in the biological aspects of our ecology that we forget or underplay the social aspects of this same ecology.