

The Fire Suppression Policy of the U. S. Forest Service

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The direct cost of forest fire control in 1943 averaged, for all lands inside the national forest boundaries, 3¼ cents per acre—a total of \$7,350,000 from the public treasury. Fire suppression constituted 20 percent of the total cost as compared with more than 50 percent in some years. For this reason and others mentioned in the author's introductory paragraphs we are glad to have here a close-up view of the policy, commonly known as "the first burning period policy," or as "the 10:00 a.m. policy," under which the Forest Service handles its fire suppression task. Apparently it is based on much the same viewpoint as Stewart Holbrook expresses in his recent book *Burning An Empire* wherein he quotes Ernest Swift, acting conservation director for Wisconsin: "The philosophy of the average American toward land must be changed. We talk of useless and waste land. By and large it was so made by man. I firmly believe that Americans should feel that every foot of land we possess as a nation has value, that there is a possible utilization for all of it."

JUST what is the "fire suppression policy" for the national forests? Although this policy has been the subject of frequent comment, and at times of strange and rather wild statements, its exact wording has apparently never been made public—probably because no one thought it would be of particular interest outside the Forest Service.

However, the policy does control suppression practices and greatly influences other phases of fire protection on the national forests, which contain one-third of the remaining sawtimber in the country, are supposed to provide demonstrations of good forestry, and require millions of public dollars annually for their protection. It may therefore be of some general interest and its publication in full, together with some comments concerning its origin and the results obtained under it to date, may have value for the historical record and for reference purposes.

INADEQUACY OF EARLY PROTECTION PRACTICES

Show and Kotok² have given a comprehensive picture of the fire control situation in the California Region during the earlier years of organized protection. In varying degrees the same situation existed in other very large sections of the West—not in all of them. As these authors point out, "up to about 1911, modern protection as we know it was not in existence. The lookout system of detection was in its infancy, and methods of communication were very poorly developed. Coupled with this were the inade-

quacy of funds for fighting fires, and the incomplete knowledge of the nature of the problem and of the kind of organization necessary to meet it." In succeeding years methods and means were gradually improved, although very slowly, especially at first.

Fortunately this period of lagging protection practices coincided generally, in much of the bad fire country of the West, with the wet climatic cycle which started prior to 1906—the beginning date of national forest fire statistics—and continued to about 1917. Apparently the fire-control policy makers of these earlier days counted on an indefinite continuance of favorable weather. And, although their zeal for economy was most commendable, it led to their giving much more attention to holding down costs than to recognizing and consequently preventing losses to the great variety of tangible and intangible values involved.

From an abstract point of view the earlier policy, as most definitely developed in California and of marked influence on suppression policies and practices in other regions in the West where values were considered low, was wisely worded in that it called for holding to a minimum the total costs of prevention, presuppression, and suppression plus the value of the damage done. Unquestionably the originators and followers of this policy were actuated by the highest principles of public service. No one who has known of their aims, and of their unstinted, heartbreaking work in attempting to develop and organize an effective fire control system and in vigorously, persistently leading suppression crews on going fires, can have other than the greatest respect for them as "he-men" and fine public servants. However, because of lack of knowledge concerning damage in those days, the damage factor in

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²Show, S. B. and E. I. Kotok. Forest fires in California, 1911-1920: an analytical study. U. S. Dept. Agric. Dept. Cir. 243. 80 pp. 1923.

actual practice was given inadequate consideration. As a result, where less obvious values were at stake, large suppression expenditures were considered unwarranted and fire in cover of seemingly low value were allowed to become large if the cost of suppression could thereby be reduced.

This rather widespread "let-burn" feature of early-day practice in fire control is understandable in view of the failure to foresee or recognize that new means of transportation would eventually make "backcountry" stands accessible; that new demands and new conversion methods would make inferior species valuable; that additional power and reclamation projects would need protection against siltation and flash floods; and that a myriad other "intangible" values would be shown by researchers and other keen observers to be of real and growing importance.

EMPHASIS ON MINIMUM SUPPRESSION COSTS

As brought out in the Show and Kotok study, serious losses resulted from the application of this earlier policy with its controlling emphasis on minimum costs. But its "herd-'em" and "let-burn" features did not produce disastrous results generally (except in 1910 with its combination of reportedly uncontrollable conditions) so long as the wet-weather cycle continued. However, by about 1917 the dry phase of the weather cycle became more evident. It continued for more than 20 years. During this time disastrous fires frequently occurred.

How the policy then in effect was applied, not only in California but in large areas elsewhere, is illustrated by the statements of many forest administrators of those days such as J. A. Fitzwater, formerly supervisor of several of the forests in northern Idaho and western Montana, and John Kinney, formerly a supervisor in the most dangerous fire section of the Intermountain Region, that they were not permitted to hire more than a few men to send initially to any fire, and that they were subject to criticism if attempts were made to take adequate steps to control fires located in relatively inaccessible country. As Kinney has pointed out, in his part of the country if a fire could not be immediately suppressed by a small crew it was to be herded toward "low-value" country, until fall rains came and put the fire out.

During the resulting long-drawn-out campaigns, range and other resource management duties were seriously slighted. Forest officers

were worn to a frazzle. The U. S. Compensation Commission complained that from no other government service did it receive so many claims involving heart conditions and other results of excessive strains. So again it is pointed out that this comment on past policies is no reflection on the personnel of those days who were trying so hard to save public funds. Nevertheless during this dry cycle tremendous areas of national forest lands of all classes were burned over. Costs were very high.

Comparison of fire records attained under the old fire policy for the six years of the wet cycle after the fire organization became reasonably effective, with six "bad" years during the succeeding dry cycle brings out the following facts for the western regions only:

	Wet-cycle yrs. 1911-1916, incl.	Dry-cycle yrs. 1919, 1924, 1926, 1929, 1931, 1934
No. of "bad fire years".....	0	6
Average acreage burned annually	352,921	980,214
Average annual special suppression "F.F." expenditures ¹	\$224,843	\$2,626,240

¹Direct costs of suppression and emergency guards, exclusive of contributed time of employees normally engaged on other duties.

As indicated by the foregoing, despite the enlightening but not fully applied findings of Gisborne, Hornby, and others, and despite great advances in roads, trails, and telephone lines, in equipment, in facilities such as lookouts, in numbers of guards, in training, in fire control techniques, and in many other essentials of adequate preparedness, the old suppression policy or practice had obviously failed to keep abreast of changing conditions, especially weather conditions. Blow-up after blow-up with long-drawn-out suppression campaigns made responsible administrative officers, resource managers, researchers, and others in the Service increasingly aware that "something must be done."

IMPORTANCE OF SPEED OF CONTROL

One of the earlier studies by Show and Kotok had brought out the positive relationship which exists between the percentage of Class C fires (over 10 acres) and the total area burned. On the basis of these findings they predicted, in essence, that if an earnest effort were made to suppress *all* fires promptly, reasonably adequate fire control would be obtained on the area

studied. Among their other major contributions to the problem, Gisborne, Hornby, and others were determining and demonstrating, in a more definite manner, that speed of control is indispensable if satisfactory fire protection is to be expected.

The Southwestern Region, with fire conditions not as dangerous on a large scale as some others but with large sample areas of various timber types and with a previous bad record in bad fire years, undertook to test these predictions and findings regionwide and to determine whether costs plus losses would be lower if *all* fires, to the greatest extent practicable, were extinguished promptly, without much regard to the immediate values endangered. This regionwide experiment was carried on for 5 years with the following averages per year:

	Under previous policy 1921-1925	Under tight control policy 1926-1930
Acreage burned	18,146	6,290
Special suppression costs ¹	\$57,814	\$55,125

¹Direct costs of detection and suppression other than "contributed time" of employees normally engaged on other duties.

As shown in the above table the area burned was reduced sharply. Costs also were reduced. This record of lowered costs was particularly notable because it was accomplished during a more severe period and when costs in other western regions increased.

In other words not only was the sum total of costs plus damage reduced, but costs alone were smaller.

With the wet-weather cycle at an end, fires periodically ran wild in many sections. This was so during 1919 and again in 1924. In 1926 every national forest in the western half of Region 1, except the Nezperce, was badly scorched. A high percentage of the Kaniksu with valuable stands of Idaho white pine was burned. As a result Col. Greeley, then chief forester, after a personal investigation of the situation in the winter of 1926 authorized a more liberal use of emergency funds for prevention and presuppression activities, and for strengthening the preparedness program generally.

During his inspection trip Col. Greeley made a remark which he probably has forgotten but which held the germ of the present "hit-'em-all-and-stay-with-'em-without-exception" policy. While conducting hearings at Missoula, Kalispell,

and Spokane, Greeley had been told of what happened to those fires which were promptly suppressed and to those which were allowed to burn because the adjacent country was of "low value." He heard how Supervisor Frank Jefferson of the Selway, in violation of the existing policy, had double-manned all lookout-smokechaser stations so that each fire, regardless of such unusual costs and of the low near-by resource values, was caught soon and while small, with the result that his was the only forest in that part of the region which had a good record that season.

After hearing this and other evidence, Col. Greeley said he was reminded of a practice observed on board ship when he was returning from France with the 10th Engineers. Every time the anchor was drawn up a sailor tapped each link of the chain with a hammer, and although the anchor was dropped and withdrawn many times during the trip, sometimes with only a brief interval between castings, the testing of each link was repeated without exception. Greeley asked why no exceptions were made to this rule—why each link was tested again and again even though it had been tested only a few hours previously. The captain told him, he said, that experience over the centuries had demonstrated to ship masters that *no* chances with the anchor chain, on which depends the safety of the ship and the lives of its passengers, should ever be taken despite the seeming absurdity of repeated tests.

THE TURNING POINT

Following the investigation of the 1926 season, the preparedness program was strengthened but still no decided change in suppression policy was made. Nor did a major change in that policy follow the disastrous fires of 1929 and 1931. In 1934 came another sad year, with fires in so-called low-value country still being too lightly attacked and thereby being herded and allowed to run—into more valuable country and heavy losses. The "break" however came that winter. At a meeting of the regional foresters and experiment station directors with the chief forester in April, 1935, the problem was thoroughly analyzed and discussed. The following points were developed:

1. That "accessibility" is merely a matter of degree.
2. That many species of low value today will very probably be of real value in the approaching future, and that if such stands can be pro-

tected at the relatively low direct cost of 1 cent to 10 cents per acre per year they should be protected and held available for immediate use when needed, thus avoiding having to wait the long time required to grow a new crop of trees after the need arises.

3. That if not worth protecting against fire the lands are not worth administering and consequently should be eliminated from the national forests with the resulting elimination of unnecessary and unjustifiable expenditures.

4. That "intangible" forest values may often be of incalculably great importance, including, but far from being limited to, spiritual and inspirational values and the value of watershed cover for flood control and for the irrigation, reclamation, and power projects already built or planned for the future.

5. That fires in low-value country too often will not "stay put" but spread unexpectedly into higher values.

6. That smoke from any large fire often lowers the visibility of lookouts as far away as 100 miles, and not infrequently 1,000 miles, with obviously adverse effects on fire protection work over wide areas.

7. That merely putting a badge on a man obviously does not convert him into the trained and tested type of fire expert needed to make far-reaching decisions.

8. That since a high percentage of the protection organization is made up of short-term employees, each probably having a different concept of values and dangers, it is unwise to rely wholly on individual discretion as to whether a fire should or should not be suppressed promptly—just as ship masters have found it unwise to exercise discretion as to whether the anchor chain should be tested.

9. That permitting such individual discretion is likely to breed indecision, fumbling, and sluggishness, and to provide an alibi for failure to attack promptly and hard.

10. That the ultimate cost of suppressing one large fire is often greater than the cost of suppressing a multitude of small ones promptly.

11. That the sum total of costs plus losses, based on a full consideration of values, will be less under an all-out suppression policy than under the policy previously in effect.

Investigations over the years of many disastrous fires—including one fire outside the national forests, the enormously disastrous Tilla-

mook fire of 1933—found one characteristic common to all of them: lack of aggressive all-out action due to the "too little or too late," "take-a-chance," "herd-'em," "let-burn" attitudes resulting from fire-control policies then in effect in many places. With that germ isolated, the specific curative treatment was not long in being discovered and applied.

THE NEW POLICY

At the 1935 conference the ten regional foresters and an equal number of forest experiment station directors, without a dissenting vote, recommended a new fire suppression policy which the chief formally established in the following circular letter of May 7, 1935:

"The approved protection policy on the National Forests calls for fast, energetic and thorough suppression of all fires in all locations, during possibly dangerous fire weather.

"When immediate control is not thus attained, the policy then calls for prompt calculating of the problems of the existing situation and probabilities of spread, and organizing to control every such fire within the first work period. Failing in this effort the attack *each* succeeding day will be planned and executed with the aim, without reservation, of obtaining control before ten o'clock of the next morning.

"In order to bring out the policy in sharp relief for discussion by the Conference all written interpretative material was stripped from it. However, I believe it is now time for Operation to issue such instructions as may seem necessary to have the policy put into full effect during the coming fire season. These will be sent you within the next few days.

"I am confident that the sum total of costs plus losses of all classes will be lower in the long run under this policy than they have been under comparable conditions heretofore. To this end, I am adding the following notes for consideration in placing it into effect:

"It may not be clear from the wording of the policy but it is obvious, nevertheless, that the objective sought also projects that policy into pre-suppression, since only by strengthening the pre-suppression forces in some quarters can the action contemplated be realized. This may call for increasing the standard of detection; plugging holes with additional fireman where so-called fireman or smoke chaser travel time is known to be longer than limits of safety; advanced placement of trained fire suppression crews to be held at carefully selected travel time limit centers. After full use of CCC, PWA, improvement and similar available man power, these additional pre-suppression sources likely can be provided in the main only by drawing upon FF. To the extent that carefully thought out plans make this necessary, you are authorized to draw upon funds from that source to enable the building up of the pre-suppression forces to required strength.

"Subject to the action required to meet the above quoted policy, expenditures for preparedness and suppression will be held to the absolute minimum, and will vary with the total of the tangible and intangible values endangered; being higher, if necessary, where values are high than in areas where values are low. In lower value country this may call for dropping back to more easily held lines no great distance from the fire

front, and from these lines taking definite and prompt action to extinguish the fire. In such country lower expenditures will also be expected for fire breaks and other types of improvements, than would be justified were higher values involved.

"No fixed rule can be given to meet every situation; the spirit implied in the policy itself will determine the action to be taken in doubtful situations.

"F. A. SILCOX,
"Forester."

The second and longer letter promised in the original letter was issued on May 25, 1935. This contained many excellent instructions concerning techniques and responsibilities; but unfortunately it was misunderstood by many who thought it carried the policy to an unjustifiable extreme. The basic and controlling policy statement of May 7, which is still in effect, is therefore the one quoted and commented on here. It carries the essential requirement that all fires, during possibly dangerous fire weather, must be promptly attacked and suppressed. But note in the next to last paragraph that, contrary to a too common misunderstanding, expenditures are to vary depending on the values endangered, and that even "control burning" is authorized under certain circumstances if its use will result in prompter suppression. And note finally the statement that "the spirit implied in the policy itself will determine the action to be taken. . . ." That can only mean that the chief and his staff have outlined a *guiding* policy. It recognizes that they could not possibly foresee every contingency, so it closes by saying in effect that when in doubt as to the applicability of this policy *be guided by the "spirit" implied in it* and you can't go wrong.

RESULTS TO DATE

The results of the policy are shown in a most convincing manner in Gisborne's "Comparison of Intensive versus Limited Forest Fire Control Action,"³ a mimeographed publication that should be of much interest to all foresters, forest owners, and managers who are concerned with fire control. The study covered two large adjacent areas. One of the 5-million-acre "sample plots" was located along the Canadian line in northern Idaho and Montana. It was given tight protection such as is called for in the new Forest Service policy. The other 5-million-acre plot was located immediately to the north. It was under a limited fire protection policy.

³Gisborne, H. T. Comparison of intensive versus limited forest fire control action. Northern Rocky Mountain Forest Expt. Sta. Res. Note No. 10. Mimeo. 1940.

The findings will not be repeated here, except to note and quote the following: "[These areas] were visited by the most severe and longest protracted lightning storms since systematic fire records have been kept. The number of new fires dumped into the laps of the fire control organizations surpassed all previous records, and, *more significantly*, all previous plans. . . . Four weeks later it was evident that while the national forests had met this test by controlling their fires, the Canadians had not been as fortunate in coping with the situation on their side of the International Boundary. . . . On the basis of the ridiculously low damage evaluation of only \$1.75 per acre, the national forest policy of fire control, aided by the facilities largely constructed and acquired during the past 6 or 8 years, and used by a trained and partially adequate organization, appears to have paid a dividend of \$273,000 in natural resources saved on two national forests during part of just one fire season!"

The results obtained through tight protection in another area—the Southwestern Region—already have been noted. Results to date for *all* the western regions are indicated in the following comparisons of average figures per year:

	1926-1934	1935-1943
Acreage burned	455,340	141,975
		(0.1 percent of the area under protection)
Special suppression costs ¹	\$1,860,026	\$1,954,401

¹Direct costs of suppression and emergency guards, other than "contributed time" of employees normally engaged on other duties.

That table does not of course bring out the entire picture. It does show a remarkably fine area-burned record for the past nine years, and at practically no greater "special" costs despite the fact that most fire-fighter wages were 50 percent to 100 percent higher in recent years than during the earlier period. Wages constitute about 75 percent of "special" suppression expenditures. But probably the most significant point is that *there has not been a single blow-up fire of long duration in the national forests of the West since the policy was put into effect.*

As a result, regular national forest personnel is now able to devote time to other pressing jobs, such as range management, to a degree considered impossible during many seasons prior to 1935. That, however, is a relatively minor

consideration in comparison with the total of both tangible and intangible values saved during this nine-year period.

To what extent these excellent results can be credited to the new fire suppression policy will always be an open question. Full credit must be given the C.C.C. and other increases in manpower, more roads, better weather conditions, wider use of fire-danger meters, more and better equipment including radio and tractors, better techniques due to the indispensable work of the research organization, quicker detection, better practices due to better training, the parachutists, and other factors which have been of immeasur-

able help. However, experience to date indicates that if, with all these and other improved fire-control resources available, another damaging and costly fire of long duration does occur, it will be due—mainly—to failure to comply with the principles expressed in the fire suppression policy herein recorded.

Modern city fire departments have learned the lesson too—there is only one safe measure to take with fire, in tenement districts or on Knob Hill—put all the power for control you need in the early stages of a fire, and in each succeeding stage, if you want to escape three-alarm fires and disaster.



State Forest Service Helps in Sale of Timber

The South Carolina State Forest Service has selectively marked more than 25.5 million board feet of timber for landowners during the past fiscal year. This service is a direct contribution to the war effort for it enabled many landowners to place their timber on the market for eventual use of the armed forces. Without this assistance, forestry officials state, many owners would never have consented to the sale of their timber.

This service is an outgrowth of an act that was passed by the 1941 general assembly in which the State Forest Service was given authorization to charge a nominal fee for the work done. In that first year a total of 8 million feet were marked, followed by nearly 13 million during the fiscal year ending June 30, 1943. The service rendered this past year represents an increase over that of the preceding year of 84 percent. It is anticipated that nearly 40 million feet of timber will be marked during the current year.